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SEQUENCE LISTING

<110> Melbourne Health
       Jane , Stephen (US Only)
       Wilanowski, Tomasz (US only)
       Ting, Stephen (US only)

<120> Diagnostic and Therapeutic Agents

<130> 12301370/EJH

<150> US 60/402055
<151> 2002-08-09

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<170> PatentIn version 3.1

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ccc cag cag tgt atc atc ctg agc cca ctg agc ggg tgg tgg ttt tcg   162
Pro Gln Gln Cys Ile Ile Leu Ser Pro Leu Ser Gly Trp Trp Phe Ser
         10   15   20

atc gga atc tca ata ctg acc agt tca gct ctg gtg ctc aag ccc caa   210
Ile Gly Ile Ser Ile Leu Thr Ser Ser Ala Leu Val Leu Lys Pro Gln
     25   30   35

atg ctc aaa ggc gaa ctc cag act cga cct tct cag aga cct tca agg   258
Met Leu Lys Gly Glu Leu Gln Thr Arg Pro Ser Gln Arg Pro Ser Arg
40   45   50   55

aag gcg ttc agg agg aac aac ttt gaa tat acc cta gaa gct tca aaa   306
Lys Ala Phe Arg Arg Asn Asn Phe Glu Tyr Thr Leu Glu Ala Ser Lys
                 60   65   70

tca ctt cga cag aag cca gga gac agt acc atg acg tac ctg aac aaa   354
Ser Leu Arg Gln Lys Pro Gly Asp Ser Thr Met Thr Tyr Leu Asn Lys

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                           75                        80                         85

ggc cag ttc tat ccc atc acc ttg aag gag gtg agc agc agt gaa gga        402
Gly Gln Phe Tyr Pro Ile Thr Leu Lys Glu Val Ser Ser Ser Glu Gly
            90                        95                    100


atc cat cat ccc atc agc aaa gtt cga agt gtg atc atg gtg gtt ttt       450
Ile His His Pro Ile Ser Lys Val Arg Ser Val Ile Met Val Val Phe
        105                       110                    115


gct gaa gac aaa agc aga gaa gat cag tta agg cat tgg aag tac tgg      498
Ala Glu Asp Lys Ser Arg Glu Asp Gln Leu Arg His Trp Lys Tyr Trp
120                       125                       130                 135


cac tcc cgg cag cac acc gct aaa caa aga tgc att gac ata gct gac      546
His Ser Arg Gln His Thr Ala Lys Gln Arg Cys Ile Asp Ile Ala Asp
                    140                       145                    150


tat aaa gaa agc ttc aac act atc agt aac atc gag gag att gcg tat      594
Tyr Lys Glu Ser Phe Asn Thr Ile Ser Asn Ile Glu Glu Ile Ala Tyr
                          155                       160                165


aac gcc att tcc ttc aca tgg gac atc aac gat gaa gca aag gtt ttc      642
Asn Ala Ile Ser Phe Thr Trp Asp Ile Asn Asp Glu Ala Lys Val Phe
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atc tct gtg aac tgc tta agc aca gat ttc tct tcc cag aag gga gtg      690
Ile Ser Val Asn Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Val
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aag ggg ttg cct ctt aac att caa gtt gat acc tat agt tac aac aac      738
Lys Gly Leu Pro Leu Asn Ile Gln Val Asp Thr Tyr Ser Tyr Asn Asn
200                       205                       210                 215


cgc agc aac aag cct gtg cac cgg gcc tac tgc cag atc aag gtc ttc      786
Arg Ser Asn Lys Pro Val His Arg Ala Tyr Cys Gln Ile Lys Val Phe
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tgt gac aag gga gct gag cgg aaa atc agg gat gaa gaa cga aag caa      834
Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg Asp Glu Glu Arg Lys Gln
                    235                       240                    245


agc aaa aga aaa gtt tct gat gtt aaa gtg cca ctg ctt ccc tct cac      882
Ser Lys Arg Lys Val Ser Asp Val Lys Val Pro Leu Leu Pro Ser His
                    250                       255                    260


aag cga atg gat atc aca gtt ttc aaa ccc ttc att gat ctc gat act      930
Lys Arg Met Asp Ile Thr Val Phe Lys Pro Phe Ile Asp Leu Asp Thr
                    265                       270                    275


cag cct gtc ctc ttc att cct gac gtg cac ttt gcc aac ttg cag cgg      978
Gln Pro Val Leu Phe Ile Pro Asp Val His Phe Ala Asn Leu Gln Arg
        280                       285                    290                 295


ggc act cat gtc ctt ccc att gcc tct gaa gaa ttg gag ggt gaa ggc     1026
Gly Thr His Val Leu Pro Ile Ala Ser Glu Glu Leu Glu Gly Glu Gly
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tct gtc ttg aaa agg ggg ccg tac ggc aca gaa gat gac ttt gct gtc        1074
Ser Val Leu Lys Arg Gly Pro Tyr Gly Thr Glu Asp Asp Phe Ala Val
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cct cct tct acc aag ctg gcc cgg ata gaa gaa cca aag aga gtg ctg        1122
Pro Pro Ser Thr Lys Leu Ala Arg Ile Glu Glu Pro Lys Arg Val Leu
            330             335             340

ctc tac gtt cga aag gag tca gaa gaa gtc ttt gat gcc ctg atg ctc        1170
Leu Tyr Val Arg Lys Glu Ser Glu Glu Val Phe Asp Ala Leu Met Leu
            345             350             355

aaa acc cca tct ttg aag ggc ttg atg gaa gct atc tca gac aaa tac        1218
Lys Thr Pro Ser Leu Lys Gly Leu Met Glu Ala Ile Ser Asp Lys Tyr
360             365             370             375

gat gtt ccc cat gac aag att ggg aaa ata ttc aag aag tgt aaa aag        1266
Asp Val Pro His Asp Lys Ile Gly Lys Ile Phe Lys Lys Cys Lys Lys
            380             385             390

ggg atc ctg gtg aac atg gac gac aac att gtg aag cat tac tcc aat        1314
Gly Ile Leu Val Asn Met Asp Asp Asn Ile Val Lys His Tyr Ser Asn
            395             400             405

gag gac acc ttccagctgc agattgaaga agccggggggg tcttacaagc              1363
Glu Asp Thr
            410
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tcaccctgac ggagatctaa aggcctgcgg gccacagctc cccaggagtt cagtgcaggt     1423

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aggtctatgt cgagggaatg ggttccttgc aggttggagg cggggctgca tctggcttgg     1543

tggtagcatt taatctattg cattggtgtt tttcagatga aagagaaatc catataccat     1603

tatgtttgaa tttcctgata tatacaggat ttaaagtgaa aactttattc caagagttaa     1663

cagagtctct gggaagcttt aggacatctg ctacgttatt tatcaaaata ttgggatctc     1723

tgccttgtgc ctacagtgtc gtgggcctgc tcgctagcag aagtcagaaa aggcgatagg     1783

cttggcttta aggatttcgt gcccttgcct gaattcagta caactccact gcctcacgtt     1843

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            20                  25                  30

Ala Leu Val Leu Lys Pro Gln Met Leu Lys Gly Glu Leu Gln Thr Arg
            35                  40                  45

Pro Ser Gln Arg Pro Ser Arg Lys Ala Phe Arg Arg Asn Asn Phe Glu
    50                  55                  60

Tyr Thr Leu Glu Ala Ser Lys Ser Leu Arg Gln Lys Pro Gly Asp Ser
65                  70                  75                  80

Thr Met Thr Tyr Leu Asn Lys Gly Gln Phe Tyr Pro Ile Thr Leu Lys
                85                  90                  95

Glu Val Ser Ser Ser Glu Gly Ile His His Pro Ile Ser Lys Val Arg
                100                 105                 110

Ser Val Ile Met Val Val Phe Ala Glu Asp Lys Ser Arg Glu Asp Gln
                115                 120                 125

Leu Arg His Trp Lys Tyr Trp His Ser Arg Gln His Thr Ala Lys Gln
            130                 135                 140

Arg Cys Ile Asp Ile Ala Asp Tyr Lys Glu Ser Phe Asn Thr Ile Ser
145                 150                 155                 160

Asn Ile Glu Glu Ile Ala Tyr Asn Ala Ile Ser Phe Thr Trp Asp Ile
                165                 170                 175

Asn Asp Glu Ala Lys Val Phe Ile Ser Val Asn Cys Leu Ser Thr Asp
                180                 185                 190

Phe Ser Ser Gln Lys Gly Val Lys Gly Leu Pro Leu Asn Ile Gln Val
            195                 200                 205

Asp Thr Tyr Ser Tyr Asn Asn Arg Ser Asn Lys Pro Val His Arg Ala
    210                 215                 220

Tyr Cys Gln Ile Lys Val Phe Cys Asp Lys Gly Ala Glu Arg Lys Ile
225                 230                 235                 240
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Arg Asp Glu Glu Arg Lys Gln Ser Lys Arg Lys Val Ser Asp Val Lys
                245             250             255

Val Pro Leu Leu Pro Ser His Lys Arg Met Asp Ile Thr Val Phe Lys
            260             265             270

Pro Phe Ile Asp Leu Asp Thr Gln Pro Val Leu Phe Ile Pro Asp Val
            275             280             285

His Phe Ala Asn Leu Gln Arg Gly Thr His Val Leu Pro Ile Ala Ser
    290             295             300

Glu Glu Leu Glu Gly Glu Gly Ser Val Leu Lys Arg Gly Pro Tyr Gly
305             310             315             320

Thr Glu Asp Asp Phe Ala Val Pro Pro Ser Thr Lys Leu Ala Arg Ile
            325             330             335

Glu Glu Pro Lys Arg Val Leu Leu Tyr Val Arg Lys Glu Ser Glu Glu
            340             345             350

Val Phe Asp Ala Leu Met Leu Lys Thr Pro Ser Leu Lys Gly Leu Met
            355             360             365

Glu Ala Ile Ser Asp Lys Tyr Asp Val Pro His Asp Lys Ile Gly Lys
    370             375             380

Ile Phe Lys Lys Cys Lys Lys Gly Ile Leu Val Asn Met Asp Asp Asn
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Ile Val Lys His Tyr Ser Asn Glu Asp Thr
            405             410
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       1               5                   10

cag aat gaa gca ctt tat cca cag cgg cgg tcc tac act agt gag gat      96
Gln Asn Glu Ala Leu Tyr Pro Gln Arg Arg Ser Tyr Thr Ser Glu Asp
15                  20                  25                  30

gag gcc tgg aaa tcc ttc ctg gaa aac cct ctc act gca gcg acc aaa      144
Glu Ala Trp Lys Ser Phe Leu Glu Asn Pro Leu Thr Ala Ala Thr Lys
                35                  40                  45

gcg atg atg agc atc aat gga gat gaa gac agc gcc gct gcg ctg ggc      192
Ala Met Met Ser Ile Asn Gly Asp Glu Asp Ser Ala Ala Ala Leu Gly
            50                  55                  60

ctg ctc tat gac tac tac aag gtt cca aga gag aga agg tca tca aca      240
Leu Leu Tyr Asp Tyr Tyr Lys Val Pro Arg Glu Arg Arg Ser Ser Thr
            65                  70                  75

gca aag cca gag gtg gag cac cct gag cca gat cac agc aaa aga aac      288.
Ala Lys Pro Glu Val Glu His Pro Glu Pro Asp His Ser Lys Arg Asn
        80                  85                  90

agc ata cca att gtg aca gag cag ccc ctc atc tct gct gga gaa aac      336
Ser Ile Pro Ile Val Thr Glu Gln Pro Leu Ile Ser Ala Gly Glu Asn
95                  100                 105                 110

aga gtg caa gta ctg aaa aat gtg cca ttt aac att gtc ctt ccc cat      384
Arg Val Gln Val Leu Lys Asn Val Pro Phe Asn Ile Val Leu Pro His
                115                 120                 125

ggc aac cag ctg ggc att gat aag aga ggc cat ctg aca gct tca gat      432
Gly Asn Gln Leu Gly Ile Asp Lys Arg Gly His Leu Thr Ala Ser Asp
            130                 -135                140

acg aca gtc act gtc tcc ata gca acg atg cct acc cac tcc atc aag      480
Thr Thr Val Thr Val Ser Ile Ala Thr Met Pro Thr His Ser Ile Lys
            145                 150                 155

aca gaa acc cag cca cat ggc ttc gct gtg gga atc ccc cca gca gtg      528
Thr Glu Thr Gln Pro His Gly Phe Ala Val Gly Ile Pro Pro Ala Val
        160                 165                 170

tat cat cct gag ccc act gag cgg gtg gtg gtt ttc gat cgg aay ctc      576
Tyr His Pro Glu Pro Thr Glu Arg Val Val Val Phe Asp Arg Asn Leu
175                 180                 185                 190

aat act gac cag ttc agc tct ggt gct caa gcc cca aat gct caa agg      624
Asn Thr Asp Gln Phe Ser Ser Gly Ala Gln Ala Pro Asn Ala Gln Arg
                195                 200                 205

cga act cca gac tcg acc ttc tca gag acc ttc aag gaa ggc gtt cag      672
Arg Thr Pro Asp Ser Thr Phe Ser Glu Thr Phe Lys Glu Gly Val Gln
            210                 215                 220

gag gtt ttc ttc ccc tcg gat ctc agt ctg cgg atg cct ggc atg aat      720
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Glu Val Phe Phe Pro Ser Asp Leu Ser Leu Arg Met Pro Gly Met Asn
    225                 230                 235

tca gag gac tat gtt ttt gac agt gtt tct ggg aac aac ttt gaa tat    768
Ser Glu Asp Tyr Val Phe Asp Ser Val Ser Gly Asn Asn Phe Glu Tyr
    240                 245                 250

acc cta gaa gct tca aaa tca ctt cga cag aag cca gga gac agt acc    816
Thr Leu Glu Ala Ser Lys Ser Leu Arg Gln Lys Pro Gly Asp Ser Thr
255                 260                 265                 270

atg acg tac ctg aac aaa ggc cag ttc tat ccc atc acc ttg aag gag    864
Met Thr Tyr Leu Asn Lys Gly Gln Phe Tyr Pro Ile Thr Leu Lys Glu
                    275                 280                 285

gtg agc agc agt gaa gga atc cat cat ccc atc agc aaa gtt cga agt    912
Val Ser Ser Ser Glu Gly Ile His His Pro Ile Ser Lys Val Arg Ser
                290                 295                 300

gtg atc atg gtg gtt ttt gct gaa gac aaa agc aga gaa gat cag tta    960
Val Ile Met Val Val Phe Ala Glu Asp Lys Ser Arg Glu Asp Gln Leu
            305                 310                 315

agg cat tgg aag tac tgg cac tcc cgg cag cac acc gct aaa caa aga   1008
Arg His Trp Lys Tyr Trp His Ser Arg Gln His Thr Ala Lys Gln Arg
    320                 325                 330

tgc att gac ata gct gac tat awa gaa agc ttc aac act atc agt aac   1056
Cys Ile Asp Ile Ala Asp Tyr Xaa Glu Ser Phe Asn Thr Ile Ser Asn
335                 340                 345                 350

atc gag gag att gcg tat aac gcc att tcc ttc aca tgg gac atc aac   1104
Ile Glu Glu Ile Ala Tyr Asn Ala Ile Ser Phe Thr Trp Asp Ile Asn
                355                 360                 365

gat gaa gca aag gtt ttc atc tct gtg aac tgc tta agc aca gat ttc   1152
Asp Glu Ala Lys Val Phe Ile Ser Val Asn Cys Leu Ser Thr Asp Phe
                370                 375                 380

tct tcc cag aag gga gtg aag ggg ttg cct ctt aac att caa gtt gat   1200
Ser Ser Gln Lys Gly Val Lys Gly Leu Pro Leu Asn Ile Gln Val Asp
            385                 390                 395

acc tat agt tac aac aac cgc agc aac aag cct gtg cac cgg gcc tac   1248
Thr Tyr Ser Tyr Asn Asn Arg Ser Asn Lys Pro Val His Arg Ala Tyr
    400                 405                 410

tgc cag atc aag gtc ttc tgt gac aag gga gct gag cgg aaa atc agg   1296
Cys Gln Ile Lys Val Phe Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg
415                 420                 425                 430

gat gaa gaa cga aag caa agc aaa aga aaa gtt tct gat gtt aaa gtg   1344
Asp Glu Glu Arg Lys Gln Ser Lys Arg Lys Val Ser Asp Val Lys Val
                435                 440                 445

cca ctg ctt ccc tct cac aag cga atg gat atc aca gtt ttc aaa ccc   1392
Pro Leu Leu Pro Ser His Lys Arg Met Asp Ile Thr Val Phe Lys Pro
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ttc att gat ctc gat act cag cct gtc ctc ttc att cct gac gtg cac        1440
Phe Ile Asp Leu Asp Thr Gln Pro Val Leu Phe Ile Pro Asp Val His
        465             470             475

ttt gcc aac ttg cag cgg ggc act cat gtc ctt ccc att gcc tct gaa        1488
Phe Ala Asn Leu Gln Arg Gly Thr His Val Leu Pro Ile Ala Ser Glu
    480             485             490

gaa ttg gag ggt gaa ggc tct gtc ttg aaa agg ggg ccg tac ggc aca        1536
Glu Leu Glu Gly Glu Gly Ser Val Leu Lys Arg Gly Pro Tyr Gly Thr
495             500             505             510

gaa gat gac ttt gct gtc cct cct tct acc aag ctg gcc cgg ata gaa        1584
Glu Asp Asp Phe Ala Val Pro Pro Ser Thr Lys Leu Ala Arg Ile Glu
            515             520             525

gaa cca aag aga gtg ctg ctc tac gtt cga aag gag tca gaa gaa gtc        1632
Glu Pro Lys Arg Val Leu Leu Tyr Val Arg Lys Glu Ser Glu Glu Val
            530             535             540

ttt gat gcc ctg atg ctc aaa acc cca tct ttg aag ggc ttg atg gaa        1680
Phe Asp Ala Leu Met Leu Lys Thr Pro Ser Leu Lys Gly Leu Met Glu
        545             550             555

gct atc tca gac aaa tac gat gtt ccc cat gac aag att ggg aaa ata        1728
Ala Ile Ser Asp Lys Tyr Asp Val Pro His Asp Lys Ile Gly Lys Ile
    560             565             570

ttc aag aag tgt aaa aag ggg atc ctg gtg aac atg gac gac aac att        1776
Phe Lys Lys Cys Lys Lys Gly Ile Leu Val Asn Met Asp Asp Asn Ile
575             580             585             590

gtg aag cat tac tcc aat gag gac acc ttc cag ctg cag att gaa gaa        1824
Val Lys His Tyr Ser Asn Glu Asp Thr Phe Gln Leu Gln Ile Glu Glu
            595             600             605

gcc ggg ggg tct tac aag ctc acc ctg acg gag atc taaaggcctg            1870
Ala Gly Gly Ser Tyr Lys Leu Thr Leu Thr Glu Ile
            610             615

cgggccacag ctccccagga gttcagtgca ggtgtttcta gatcttacgg tttggcaact    1930

gcaggtaacc ccagtcagcc atgtcgccag cacaggtcta tgtcgaggga atgggttcct    1990

tgcaggttgg aggcggggct gcatctggct tggtggtagc atttaatcta ttgcattggt    2050

gtttttcaga tgaaagagaa atccatatac cattatgttt gaatttcctg atatatacag    2110

gatttaaagt gaaaacttta ttccaagagt taacagagtc tctgggaagc tttaggacat    2170

ctgctacgtt atttatcaaa atattgggat ctctgccttg tgcctacagt gtcgtgggcc    2230

tgctcgctag cagaagtcag aaaaggcgat aggcttggct ttaaggattt cgtgcccttg    2290

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Trp Lys Ser Phe Leu Glu Asn Pro Leu Thr Ala Ala Thr Lys Ala Met
        35   40   45

Met Ser Ile Asn Gly Asp Glu Asp Ser Ala Ala Ala Leu Gly Leu Leu
    50   55   60

Tyr Asp Tyr Tyr Lys Val Pro Arg Glu Arg Arg Ser Ser Thr Ala Lys
65   70   75   80

Pro Glu Val Glu His Pro Glu Pro Asp His Ser Lys Arg Asn Ser Ile
                85   90   95

Pro Ile Val Thr Glu Gln Pro Leu Ile Ser Ala Gly Glu Asn Arg Val
                100   105   110

Gln Val Leu Lys Asn Val Pro Phe Asn Ile Val Leu Pro His Gly Asn
        115   120   125

Gln Leu Gly Ile Asp Lys Arg Gly His Leu Thr Ala Ser Asp Thr Thr
    130   135   140

Val Thr Val Ser Ile Ala Thr Met Pro Thr His Ser Ile Lys Thr Glu
145   150   155   160

Thr Gln Pro His Gly Phe Ala Val Gly Ile Pro Pro Ala Val Tyr His

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             165                    170                    175


   Pro Glu Pro Thr Glu Arg Val Val Val Phe Asp Arg Asn Leu Asn Thr
               180                185                190


   Asp Gln Phe Ser Ser Gly Ala Gln Ala Pro Asn Ala Gln Arg Arg Thr
               195                200                205


   Pro Asp Ser Thr Phe Ser Glu Thr Phe Lys Glu Gly Val Gln Glu Val
       210                215                220


   Phe Phe Pro Ser Asp Leu Ser Leu Arg Met Pro Gly Met Asn Ser Glu
   225                230                235                240


   Asp Tyr Val Phe Asp Ser Val Ser Gly Asn Asn Phe Glu Tyr Thr Leu
               245                250                255


   Glu Ala Ser Lys Ser Leu Arg Gln Lys Pro Gly Asp Ser Thr Met Thr
               260                265                270


   Tyr Leu Asn Lys Gly Gln Phe Tyr Pro Ile Thr Leu Lys Glu Val Ser
               275                280                285


   Ser Ser Glu Gly Ile His His Pro Ile Ser Lys Val Arg Ser Val Ile
       290                295                300


   Met Val Val Phe Ala Glu Asp Lys Ser Arg Glu Asp Gln Leu Arg His
   305                310                315                320


   Trp Lys Tyr Trp His Ser Arg Gln His Thr Ala Lys Gln Arg Cys Ile
               325                330                335


   Asp Ile Ala Asp Tyr Xaa Glu Ser Phe Asn Thr Ile Ser Asn Ile Glu
               340                345                350


   Glu Ile Ala Tyr Asn Ala Ile Ser Phe Thr Trp Asp Ile Asn Asp Glu
               355                360                365


   Ala Lys Val Phe Ile Ser Val Asn Cys Leu Ser Thr Asp Phe Ser Ser
       370                375                380


   Gln Lys Gly Val Lys Gly Leu Pro Leu Asn Ile Gln Val Asp Thr Tyr
   385                390                395                400
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Ser Tyr Asn Asn Arg Ser Asn Lys Pro Val His Arg Ala Tyr Cys Gln
             405               410                        415

Ile Lys Val Phe Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg Asp Glu
             420               425                    430

Glu Arg Lys Gln Ser Lys Arg Lys Val Ser Asp Val Lys Val Pro Leu
         435               440       ~           445

Leu Pro Ser His Lys Arg Met Asp Ile Thr Val Phe Lys Pro Phe Ile
     450               455                460

Asp Leu Asp Thr Gln Pro Val Leu Phe Ile Pro Asp Val His Phe Ala
465               470               475                    480

Asn Leu Gln Arg Gly Thr His Val Leu Pro Ile Ala Ser Glu Glu Leu
             485               490                    495

Glu Gly Glu Gly Ser Val Leu Lys Arg Gly Pro Tyr Gly Thr Glu Asp
             500               505               510

Asp Phe Ala Val Pro Pro Ser Thr Lys Leu Ala Arg Ile Glu Glu Pro
         515               520               525

Lys Arg Val Leu Leu Tyr Val Arg Lys Glu Ser Glu Glu Val Phe Asp
     530               535                540

Ala Leu Met Leu Lys Thr Pro Ser Leu Lys Gly Leu Met Glu Ala Ile
545               550               555                    560

Ser Asp Lys Tyr Asp Val Pro His Asp Lys Ile Gly Lys Ile Phe Lys
             565               570                575

Lys Cys Lys Lys Gly Ile Leu Val Asn Met Asp Asp Asn Ile Val Lys
             580               585               590

His Tyr Ser Asn Glu Asp Thr Phe Gln Leu Gln Ile Glu Glu Ala Gly
             595               600               605

Gly Ser Tyr Lys Leu Thr Leu Thr Glu Ile
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       Met Ser Gln Glu Ser Asp Asn Asn Lys Arg Leu Val Ala Leu
       1               5                   10

gtg ccc atg ccc agt gac cct cca ttc aat acc cga aga gcc tac acc       156
Val Pro Met Pro Ser Asp Pro Pro Phe Asn Thr Arg Arg Ala Tyr Thr
15                  20                  25                  30

agt gag gat gaa gcc tgg aag tca tac ttg gag aat ccc ctg aca gca       204
Ser Glu Asp Glu Ala Trp Lys Ser Tyr Leu Glu Asn Pro Leu Thr Ala
                35                  40                  45

gcc acc aag gcc atg atg agc att aat ggt gat gag gac agt gct gct       252
Ala Thr Lys Ala Met Met Ser Ile Asn Gly Asp Glu Asp Ser Ala Ala
                50                  55                  60

gcc ctc ggc ctg ctc tat gac tac tac aag gtt cct cga gac aag agg       300
Ala Leu Gly Leu Leu Tyr Asp Tyr Tyr Lys Val Pro Arg Asp Lys Arg
            65                  70                  75

ctg ctg tct gta agc aaa gca agt gac agc caa gaa gac cag gag aaa       348
Leu Leu Ser Val Ser Lys Ala Ser Asp Ser Gln Glu Asp Gln Glu Lys
            80                  85                  90

aga aac tgc ctt ggc acc agt gaa gcc cag agt aat ttg agt gga gga      396
Arg Asn Cys Leu Gly Thr Ser Glu Ala Gln Ser Asn Leu Ser Gly Gly
95                  100                 105                 110

gaa aac cga gtg caa gtc cta aag act gtt cca gtg aac ctt tcc cta      444
Glu Asn Arg Val Gln Val Leu Lys Thr Val Pro Val Asn Leu Ser Leu
                115                 120                 125

aat caa gat cac ctg gag aat tcc aag cgg gaa cag tac agc atc agc      492
Asn Gln Asp His Leu Glu Asn Ser Lys Arg Glu Gln Tyr Ser Ile Ser
                130                 135                 140

ttc ccc gag agc tct gcc atc atc ccg gtg tcg gga atc acg gtg gtg      540
Phe Pro Glu Ser Ser Ala Ile Ile Pro Val Ser Gly Ile Thr Val Val
                145                 150                 155

aaa gct gaa gat ttc aca cca gtt ttc atg gcc cca cct gtg cac tat      588
Lys Ala Glu Asp Phe Thr Pro Val Phe Met Ala Pro Pro Val His Tyr
                145                 150                 155
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```
        160                      165                      170

ccc cgg gga gat ggg gaa gag caa cga gtg gtt atc ttt gaa cag act     636
Pro Arg Gly Asp Gly Glu Glu Gln Arg Val Val Ile Phe Glu Gln Thr
175             180              ·185                 190

cag tat gac gtg ccc tcg ctg gcc acc cac agc gcc tat ctc aaa gac     684
Gln Tyr Asp Val Pro Ser Leu Ala Thr His Ser Ala Tyr Leu Lys Asp
                195              200              205

gac cag cgc agc act ccg gac agc aca tac agc gag agc ttc aag gac     732
Asp Gln Arg Ser Thr Pro Asp Ser Thr Tyr Ser Glu Ser Phe Lys Asp
                210              215              220

gca gcc aca gag aaa ttt cgg agt gct tca gtt ggg gct gag gag tac     780
Ala Ala Thr Glu Lys Phe Arg Ser Ala Ser Val Gly Ala Glu Glu Tyr
                225              230              235

atg tat gat cag aca tca agt ggc aca ttt cag tac acc ctg gaa gcc     828
Met Tyr Asp Gln Thr Ser Ser Gly Thr Phe Gln Tyr Thr Leu Glu Ala
        240              245              250

acc aaa tct ctc cgt cag aag cag ggg gag ggc ccc atg acc tac ctc     876
Thr Lys Ser Leu Arg Gln Lys Gln Gly Glu Gly Pro Met Thr Tyr Leu
255             260                  265                 270

aac aaa gga cag ttc tat gcc ata aca ctc agc gag acc gga gac aac     924
Asn Lys Gly Gln Phe Tyr Ala Ile Thr Leu Ser Glu Thr Gly Asp Asn
                275              280              285

aaa tgc ttc cga cac ccc atc agc aaa gtc agg agt gtg gtg atg gtg     972
Lys Cys Phe Arg His Pro Ile Ser Lys Val Arg Ser Val Val Met Val
                290              295              300

gtc ttc agt gaa gac aaa aac aga gat gaa cag ctc aaa tac tgg aaa    1020
Val Phe Ser Glu Asp Lys Asn Arg Asp Glu Gln Leu Lys Tyr Trp Lys
        305              310              315

tac tgg cac tct cgg cag cat acg gcg aag cag agg gtc ctt gac att    1068
Tyr Trp His Ser Arg Gln His Thr Ala Lys Gln Arg Val Leu Asp Ile
        320              325                      330

gcc gat tac aag gag agc ttt aat acg att gga aac att gaa gag att    1116
Ala Asp Tyr Lys Glu Ser Phe Asn Thr Ile Gly Asn Ile Glu Glu Ile
335             340              345              350

gca tat aat gct gtt tcc ttt acc tgg gac gtg aat gaa gag gcg aag    1164
Ala Tyr Asn Ala Val Ser Phe Thr Trp Asp Val Asn Glu Glu Ala Lys
                355              360              365

att ttc atc acc gtg aat tgc ttg agc aca gat ttc tcc tcc caa aaa    1212
Ile Phe Ile Thr Val Asn Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys
                370              375              380

ggg gtg aaa gga ctt cct ttg atg att cag att gac aca tac agt tat    1260
Gly Val Lys Gly Leu Pro Leu Met Ile Gln Ile Asp Thr Tyr Ser Tyr
        385              390                  395
```

- 14 -

```
aac aat cgt agc aat aaa ccc att cat aga gct tat tgc cag atc aag      1308
Asn Asn Arg Ser Asn Lys Pro Ile His Arg Ala Tyr Cys Gln Ile Lys
    400                 405                 410

gtc ttc tgt gac aaa gga gca gaa aga aaa atc cga gat gaa gag cgg      1356
Val Phe Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg Asp Glu Glu Arg
415             420                 425                 430

aag cag aac agg aag aaa ggg aaa ggc cag gcc tcc caa act caa tgc      1404
Lys Gln Asn Arg Lys Lys Gly Lys Gly Gln Ala Ser Gln Thr Gln Cys
                435                 440                 445

aac agc tcc tct gat ggg aag ttg gct gcc ata cct tta cag aag aag      1452
Asn Ser Ser Ser Asp Gly Lys Leu Ala Ala Ile Pro Leu Gln Lys Lys
            450                 455                 460

agt gac atc acc tac ttc aaa acc atg cct gat ctc cac tca cag cca      1500
Ser Asp Ile Thr Tyr Phe Lys Thr Met Pro Asp Leu His Ser Gln Pro
                465                 470                 475

gtt ctc ttc ata cct gat gtt cac ttt gca aac ctg cag agg acc gga      1548
Val Leu Phe Ile Pro Asp Val His Phe Ala Asn Leu Gln Arg Thr Gly
        480                 485                 490

cag gtg tat tac aac acg gat gat gaa cga gaa ggt ggc agt gtc ctt      1596
Gln Val Tyr Tyr Asn Thr Asp Asp Glu Arg Glu Gly Gly Ser Val Leu
495                 500                 505                 510

gtt aaa cgg atg ttc cgg ccc atg gaa gag gag ttt ggt cca gtg cct      1644
Val Lys Arg Met Phe Arg Pro Met Glu Glu Glu Phe Gly Pro Val Pro
                515                 520                 525

tca aag cag atg aaa gaa gaa ggg aca aag cga gtg ctc ttg tac gtg      1692
Ser Lys Gln Met Lys Glu Glu Gly Thr Lys Arg Val Leu Leu Tyr Val
                530                 535                 540

agg aag gag act gac gat gtg ttc gat gca ttg atg ttg aag tct ccc      1740
Arg Lys Glu Thr Asp Asp Val Phe Asp Ala Leu Met Leu Lys Ser Pro
        545                 550                 555

aca gtg aag ggc ctg atg gaa gcg ata tct gag aaa tat ggg ctg ccc      1788
Thr Val Lys Gly Leu Met Glu Ala Ile Ser Glu Lys Tyr Gly Leu Pro
        560                 565                 570

gtg gag aag ata gca aag ctt tac aag aaa agc aaa aaa ggc atc ttg      1836
Val Glu Lys Ile Ala Lys Leu Tyr Lys Lys Ser Lys Lys Gly Ile Leu
575                 580                 585                 590

gtg aac atg gat gac aac atc atc gag cac tac tcg aac gag gac acc      1884
Val Asn Met Asp Asp Asn Ile Ile Glu His Tyr Ser Asn Glu Asp Thr
                595                 600                 605

ttc atc ctc aac atg gag agc atg gtg gag ggc ttc aag gtc acg ctc      1932
Phe Ile Leu Asn Met Glu Ser Met Val Glu Gly Phe Lys Val Thr Leu
                610                 615                 620
```

- 15 -

```
atg gaa atc tagccctggg tttggcatcc gctttggctg gagctctcag        1981
Met Glu Ile
        625

tgcgttcctc cctgagagag acagaagccc cagccccaga acctggagac ccatctcccc    2041

catctcacaa ctgctgttac aagaccgtgc tggggagtgg ggcaagggac aggccccact    2101

gtcggtgtgc ttggcccatc cactggcacc taccacggag ctgaagcctg agcccctcag    2161

gaaggtgcct taggcctgtt ggattcctat ttattgccca ccttttcctg gagcccaggt    2221

ccaggcccgc caggactctg caggtcactg ctagctccag atgagaccgt ccagcgttcc    2281

cccttcaaga gaaacactca tcccgaacag cctaaaaaat tcccatccct tctctctcac    2341

ccctccatat ctatctcccg agtggctgga caaaatgagc tacgtctggg tgcagtagtt    2401

ataggtgggg caagaggtgg atgcccactt tctggtcaga cacctttagg ttgctctggg    2461

gaaggctgtc ttgctaaata cctccagggt tcccagcaag tggccaccag gccttgtaca    2521

ggaagacatt cagtcaccgt gtaattagta acacagaaag tctgcctgtc tgcattgtac    2581

atagtgttta taatattgta ataatatatt ttacctgtgg tatgtgggca tgtttactgc    2641

cactggcctt agaggagaca cagacctgga daccgtttta atggggggttt ttgcctctgt    2701

gcctgttcaa gagacttgca gggctaggta gagggccttt gggatgttaa ggtgactgca    2761

gctgatgcca agatggactc tgcaatgggc atacctgggg gctcgttccc tgtccccaga    2821

ggaagccccc tctccttctc catgggcatg actctcttc gaggccacca cgtttatctc     2881

acaatgatgt gttttgcttg actttccctt tgcgctgtct cgtgggaaag gtcattctgt    2941

ctgagacccc agctccttct ccagctttgg ctgcgggcat ggcctgagct ttctggagag    3001

cctctgcagg gggtttgcca tcagggccct gtggctgggt ctgctgcaga gctccttggc    3061

tatcaggaga atcctggaca ctgtactgtg cctcccagtt tacaaacacg cccttcatct    3121

caagtggccc tttaaaaggc ctgctgccat gtgagagctg tgaacagctc agctctgagt    3181

cggcaggctg gggcttcctc ctgggccacc agatggaaag ggggtattgt ttgcctcact    3241

cctggatgct gcgttttaag gaagtgagtg agaaagaatg tgccaagata cctggctcct    3301

gtgaaaccag cctcaggagg gaaactggga gagagaagct gtggtctcct gctacatgcc    3361

ctgggagctg gaagagaaaa acactcccct aaacaatcgc aaaatgatga accatcatgg    3421

gccactgttc tctttgaggg gacaggttta ggggtttgcg ttcgcccttg tgggctgaag    3481

cactagcttt ttggtagcta gacacatcct gcacccaaag gttctctaca aaggcccaga    3541

tttgtttgta aagcactttg actcttacct ggaggcccgc tctctaaggg cttcctgcgc    3601
```

```
tcccacctca tctgtccctg agatgcagag caggatggag ggtctgcttc tagctcagct    3661

gtttctcctt gaggttgcgg aggaattgaa ttgaatggga cagagggcag gtgctgtggc    3721

caagaagatc tccgagcagc agtgacgggg caccttgctg tgtgtcctct gggcatgtta    3781

acccttctgt ggggccaaag gtttgcatcg tggatccagc tgtgctccag tctgtcccct    3841

cctcctccac tctgactgcc acgccccgga ccagcagctt ggggaccctc cagggtacta    3901

atggggctct gttctgagat ggacaaattc agtgttggaa atacatgttg tactatgcac    3961

ttcccatgct cctagggtta ggaatagttt caaacatgat tggcagacat aacaacggca    4021

aatactcgga ctggggcata ggactccaga gtaggaaaaa gacaaagat ttggcagcct    4081

gacacaggca acctacccct ctctctccag cctctttatg aaactgtttg tttgccagtc    4141

ctgccctaag gcagaagatg aattgaagat gctgtgcatg tttcctaagt ccttgagcaa    4201

tcatggtggt gacaattgcc acagggata tgaggccagt gccaccagag ggtggtgcca    4261

agtgccacat cccttccgat ccattcccct ctgcatcctc ggagcacccc agtttgcctt    4321

tgatgtgtcc gctgtgtatg ttagctgaac tttgatgagc aaaatttcct gagcgaaaca    4381

ctccaaagag ataggaaaac ttgccgcctc ttctttttg tcccttaatc aaactcaaat    4441

aagcttaaaa aaaatccatg gaagatcatg gacatgtgaa atgagcattt ttttcttttt    4501

tttttttttt tttaacaaag tctgaactga g                                    4532
```

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<210>   6
<211>   625
<212>   PRT
<213>   human

<400>   6

Met Ser Gln Glu Ser Asp Asn Asn Lys Arg Leu Val Ala Leu Val Pro
1               5                   10                  15


Met Pro Ser Asp Pro Pro Phe Asn Thr Arg Arg Ala Tyr Thr Ser Glu
            20                  25                  30


Asp Glu Ala Trp Lys Ser Tyr Leu Glu Asn Pro Leu Thr Ala Ala Thr
        35                  40                  45


Lys Ala Met Met Ser Ile Asn Gly Asp Glu Asp Ser Ala Ala Ala Leu
    50                  55                  60
```

- 17 -

Gly Leu Leu Tyr Asp Tyr Tyr Lys Val Pro Arg Asp Lys Arg Leu Leu
65   70   75   80

Ser Val Ser Lys Ala Ser Asp Ser Gln Glu Asp Gln Glu Lys Arg Asn
                    85   90   95

Cys Leu Gly Thr Ser Glu Ala Gln Ser Asn Leu Ser Gly Gly Glu Asn
                    100   105   110

Arg Val Gln Val Leu Lys Thr Val Pro Val Asn Leu Ser Leu Asn Gln
        115   120   125

Asp His Leu Glu Asn Ser Lys Arg Glu Gln Tyr Ser Ile Ser Phe Pro
    130   135   140

Glu Ser Ser Ala Ile Ile Pro Val Ser Gly Ile Thr Val Val Lys Ala
145   150   155   160

Glu Asp Phe Thr Pro Val Phe Met Ala Pro Pro Val His Tyr Pro Arg
                165   170   175

Gly Asp Gly Glu Glu Gln Arg Val Val Ile Phe Glu Gln Thr Gln Tyr
                180   185   190

Asp Val Pro Ser Leu Ala Thr His Ser Ala Tyr Leu Lys Asp Asp Gln
        195   200   205

Arg Ser Thr Pro Asp Ser Thr Tyr Ser Glu Ser Phe Lys Asp Ala Ala
    210   215   220

Thr Glu Lys Phe Arg Ser Ala Ser Val Gly Ala Glu Glu Tyr Met Tyr
225   230   235   240

Asp Gln Thr Ser Ser Gly Thr Phe Gln Tyr Thr Leu Glu Ala Thr Lys
                245   250   255

Ser Leu Arg Gln Lys Gln Gly Glu Gly Pro Met Thr Tyr Leu Asn Lys
            260   265   270

Gly Gln Phe Tyr Ala Ile Thr Leu Ser Glu Thr Gly Asp Asn Lys Cys
            275   280   285

Phe Arg His Pro Ile Ser Lys Val Arg Ser Val Val Met Val Val Phe

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```
        290                    295                    300


Ser  Glu  Asp  Lys  Asn  Arg  Asp  Glu  Gln  Leu  Lys  Tyr  Trp  Lys  Tyr  Trp
305                 310                 315                      320


His  Ser  Arg  Gln  His  Thr  Ala  Lys  Gln  Arg  Val  Leu  Asp  Ile  Ala  Asp
                    325                 330                      335


Tyr  Lys  Glu  Ser  Phe  Asn  Thr  Ile  Gly  Asn  Ile  Glu  Glu  Ile  Ala  Tyr
               340                 345                      350


Asn  Ala  Val  Ser  Phe  Thr  Trp  Asp  Val  Asn  Glu  Glu  Ala  Lys  Ile  Phe
               355                 360                      365


Ile  Thr  Val  Asn  Cys  Leu  Ser  Thr  Asp  Phe  Ser  Ser  Gln  Lys  Gly  Val
     370                 375                 380


Lys  Gly  Leu  Pro  Leu  Met  Ile  Gln  Ile  Asp  Thr  Tyr  Ser  Tyr  Asn  Asn
385                 390                 395                      400


Arg  Ser  Asn  Lys  Pro  Ile  His  Arg  Ala  Tyr  Cys  Gln  Ile  Lys  Val  Phe
               405                 410                      415


Cys  Asp  Lys  Gly  Ala  Glu  Arg  Lys  Ile  Arg  Asp  Glu  Glu  Arg  Lys  Gln
               420                 425                      430


Asn  Arg  Lys  Lys  Gly  Lys  Gly  Gln  Ala  Ser  Gln  Thr  Gln  Cys  Asn  Ser
          435                 440                 445


Ser  Ser  Asp  Gly  Lys  Leu  Ala  Ala  Ile  Pro  Leu  Gln  Lys  Lys  Ser  Asp
     450                 455                 460


Ile  Thr  Tyr  Phe  Lys  Thr  Met  Pro  Asp  Leu  His  Ser  Gln  Pro  Val  Leu
465                 470                 475                      480


Phe  Ile  Pro  Asp  Val  His  Phe  Ala  Asn  Leu  Gln  Arg  Thr  Gly  Gln  Val
               485                 490                      495


Tyr  Tyr  Asn  Thr  Asp  Asp  Glu  Arg  Glu  Gly  Gly  Ser  Val  Leu  Val  Lys
               500                 505                      510


Arg  Met  Phe  Arg  Pro  Met  Glu  Glu  Glu  Phe  Gly  Pro  Val  Pro  Ser  Lys
          515                 520                 525
```

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```
Gln Met Lys Glu Glu Gly Thr Lys Arg Val Leu Leu Tyr Val Arg Lys
    530               535               540

Glu Thr Asp Asp Val Phe Asp Ala Leu Met Leu Lys Ser Pro Thr Val
545               550               555               560

Lys Gly Leu Met Glu Ala Ile Ser Glu Lys Tyr Gly Leu Pro Val Glu
                565               570               575

Lys Ile Ala Lys Leu Tyr Lys Lys Ser Lys Lys Gly Ile Leu Val Asn
                580               585               590

Met Asp Asp Asn Ile Ile Glu His Tyr Ser Asn Glu Asp Thr Phe Ile
        595               600               605

Leu Asn Met Glu Ser Met Val Glu Gly Phe Lys Val Thr Leu Met Glu
    610               615               620

Ile
625
```

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<210>    7
<211>    1870
<212>    DNA
<213>    HUMAN

<220>
<221>    CDS
<222>    (47)..(1867)
<223>

<400>    7
aggagatgtg ccaaactgtt aagagtggtt atttctgagc agaaga atg tgg atg     55
                                                   Met Trp Met
                                                   1

aat tcc att ctt cct att ttt ctt ttc agg tct gtg cgg ctg cta aag   103
Asn Ser Ile Leu Pro Ile Phe Leu Phe Arg Ser Val Arg Leu Leu Lys
    5               10               15

aac gac cca gtc aac ttg cag aaa ttc tct tac act agt gag gat gag   151
Asn Asp Pro Val Asn Leu Gln Lys Phe Ser Tyr Thr Ser Glu Asp Glu
20               25               30               35

gcc tgg aag acg tac cta gaa aac ccg ttg aca gct gcc aca aag gcc   199
Ala Trp Lys Thr Tyr Leu Glu Asn Pro Leu Thr Ala Ala Thr Lys Ala
                40               45               50
```

- 20 -

```
atg atg aga gtc aat gga gat gat gac agt gtt gcg gcc ttg agc ttc    247
Met Met Arg Val Asn Gly Asp Asp Asp Ser Val Ala Ala Leu Ser Phe
            55              60              65

ctc tat gat tac tac atg ggt ccc aag gag aag cgg ata ttg tcc tcc    295
Leu Tyr Asp Tyr Tyr Met Gly Pro Lys Glu Lys Arg Ile Leu Ser Ser
            70              75              80

agc act ggg ggc agg aat gac caa gga aag agg tac tac cat ggc atg    343
Ser Thr Gly Gly Arg Asn Asp Gln Gly Lys Arg Tyr Tyr His Gly Met
85              90              95

gaa tat gag acg gac ctc act ccc ctt gaa agc ccc aca cac ctc atg    391
Glu Tyr Glu Thr Asp Leu Thr Pro Leu Glu Ser Pro Thr His Leu Met
100             105             110             115

aaa ytc ctg aca gag aac gtg tct gga acc cca gag tac cca gat ttg    439
Lys Xaa Leu Thr Glu Asn Val Ser Gly Thr Pro Glu Tyr Pro Asp Leu
            120             125             130

ctc aag aag aat aac ctg atg agc ttg gag ggg gcc ttg ccc acc cct    487
Leu Lys Lys Asn Asn Leu Met Ser Leu Glu Gly Ala Leu Pro Thr Pro
            135             140             145

ggc aag gca gct ccc ctc cct gca ggc ccc agc aag ctg gag gcc ggc    535
Gly Lys Ala Ala Pro Leu Pro Ala Gly Pro Ser Lys Leu Glu Ala Gly
            150             155             160

tct gtg gac agc tac ctg tta ccc acy act gat atg tat gat aat ggc    583
Ser Val Asp Ser Tyr Leu Leu Pro Xaa Thr Asp Met Tyr Asp Asn Gly
165             170             175

tcc ctc aac tcc ttg ttt gag agc att cat ggg gtg ccg ccc aca cag    631
Ser Leu Asn Ser Leu Phe Glu Ser Ile His Gly Val Pro Pro Thr Gln
180             185             190             195

cgc tgg cag cca gac agc acc ttc aaa gat gac cca cag gag tcg atg    679
Arg Trp Gln Pro Asp Ser Thr Phe Lys Asp Asp Pro Gln Glu Ser Met
            200             205             210

ctc ttc cca gat atc ctg aaa acc tcc ccg gaa ccc cca tgt cca gag    727
Leu Phe Pro Asp Ile Leu Lys Thr Ser Pro Glu Pro Pro Cys Pro Glu
            215             220             225

gac tac ccc agc ctc aaa agt gac ttt gaa tac acc ctg ggc tcc ccc    775
Asp Tyr Pro Ser Leu Lys Ser Asp Phe Glu Tyr Thr Leu Gly Ser Pro
            230             235             240

aaa gcc atc cac atc aag tca ggc gag tca ccc atg gcc tac ctc aac    823
Lys Ala Ile His Ile Lys Ser Gly Glu Ser Pro Met Ala Tyr Leu Asn
245             250             255

aaa ggc cag ttc tac ccc gtc acc ctg cgg acc cca gca ggt ggc aaa    871
Lys Gly Gln Phe Tyr Pro Val Thr Leu Arg Thr Pro Ala Gly Gly Lys
260             265             270             275
```

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```
ggc ctt gcc ttg tcc tcc aac aaa gtc aag agt gtg gtg atg gtt gtc      919
Gly Leu Ala Leu Ser Ser Asn Lys Val Lys Ser Val Val Met Val Val
                280                 285                 290

ttc gac aat gag aag gtc cca gta gag cag ctg cgc ttc tgg aag cac      967
Phe Asp Asn Glu Lys Val Pro Val Glu Gln Leu Arg Phe Trp Lys His
                295                 300                 305

tgg cat tcc cgg caa ccc act gcc aag cag cgg gtc att gac gtg gct     1015
Trp His Ser Arg Gln Pro Thr Ala Lys Gln Arg Val Ile Asp Val Ala
        310                 315                 320

gac tgc aaa gaa aac ttc aac act gtg gag cac att gag gag gtg gcc     1063
Asp Cys Lys Glu Asn Phe Asn Thr Val Glu His Ile Glu Glu Val Ala
        325                 330                 335

tat aat gca ctg tcc ttt gtg tgg aac gtg aat gaa gag gcc aag gtg     1111
Tyr Asn Ala Leu Ser Phe Val Trp Asn Val Asn Glu Glu Ala Lys Val
340                 345                 350                 355

ttc atc ggc gta aac tgt ctg agc aca gac ttt tcc tca caa aag ggg     1159
Phe Ile Gly Val Asn Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly
                360                 365                 370

gtg aag ggt gtc ccc ctg aac ctg cag att gac acc tat gac tgt ggc     1207
Val Lys Gly Val Pro Leu Asn Leu Gln Ile Asp Thr Tyr Asp Cys Gly
                375                 380                 385

ttg ggc act gag cgc ctg gta cac cgt gct gtc tgc cag atc aag atc     1255
Leu Gly Thr Glu Arg Leu Val His Arg Ala Val Cys Gln Ile Lys Ile
                390                 395                 400

ttc tgt gac aag gga gct gag agg aag atg cgc gat gac gag cgg aag     1303
Phe Cys Asp Lys Gly Ala Glu Arg Lys Met Arg Asp Asp Glu Arg Lys
        405                 410                 415

cag ttc cgg agg aag gtc aag tgc cct gac tcc agc aac agt ggc gtc     1351
Gln Phe Arg Arg Lys Val Lys Cys Pro Asp Ser Ser Asn Ser Gly Val
420                 425                 430                 435

aag ggc tgc ctg ctg tcg ggc ttc agg ggc aat gag acg acc tac ctt     1399
Lys Gly Cys Leu Leu Ser Gly Phe Arg Gly Asn Glu Thr Thr Tyr Leu
                440                 445                 450

cgg cca gag act gac ctg gag acg cca ccc gtg ctg ttc atc ccc aat     1447
Arg Pro Glu Thr Asp Leu Glu Thr Pro Pro Val Leu Phe Ile Pro Asn
                455                 460                 465

gtg cac ttc tcc agc ctg cag cgc tct gga ggg gca gcc ccc tcg gca     1495
Val His Phe Ser Ser Leu Gln Arg Ser Gly Gly Ala Ala Pro Ser Ala
        470                 475                 480

gga ccc agc agc tcc aac agg ctg cct ctg aag cgt acc tgc tcg ccc     1543
Gly Pro Ser Ser Ser Asn Arg Leu Pro Leu Lys Arg Thr Cys Ser Pro
        485                 490                 495

ttc act gag gag ttt gag cct ctg ccc tcc aag cag gcc aag gaa ggc     1591
Phe Thr Glu Glu Phe Glu Pro Leu Pro Ser Lys Gln Ala Lys Glu Gly
```

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```
Phe Thr Glu Glu Phe Glu Pro Leu Pro Ser Lys Gln Ala Lys Glu Gly
500             505             510              515

gac ctt cag aga gtt ctg ctg tat gtg cgg agg gag act gag gag gtg    1639
Asp Leu Gln Arg Val Leu Leu Tyr Val Arg Arg Glu Thr Glu Glu Val
                520             525              530

ttt gac gcg ctc atg ttg aag acc cca gac ctg aag ggg ctg agg aat    1687
Phe Asp Ala Leu Met Leu Lys Thr Pro Asp Leu Lys Gly Leu Arg Asn
                535             540              545

gcg atc tct gag aag tat ggg ttc cct gaa gag aac att tac aaa gtc    1735
Ala Ile Ser Glu Lys Tyr Gly Phe Pro Glu Glu Asn Ile Tyr Lys Val
            550             555             560

tac aag aaa tgc aag cga gga atc tta gtc aac atg gac aac aac atc    1783
Tyr Lys Lys Cys Lys Arg Gly Ile Leu Val Asn Met Asp Asn Asn Ile
        565             570             575

att cag cat tac agc aac cac gtc gcc ttc ctg ctg gac atg ggg gag    1831
Ile Gln His Tyr Ser Asn His Val Ala Phe Leu Leu Asp Met Gly Glu
580             585             590             595

ctg gac ggc aaa att cag atc atc ctt aag gag ctg taa                1870
Leu Asp Gly Lys Ile Gln Ile Ile Leu Lys Glu Leu
            600             605
```

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<210>   8
<211>   607
<212>   PRT
<213>   HUMAN

<220>
<221>   misc_feature
<222>   (117)..(117)
<223>   The 'Xaa' at location 117 stands for Leu, or Phe.

<220>
<221>   misc_feature
<222>   (172)..(172)
<223>   The 'Xaa' at location 172 stands for Thr.

<400>   8
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```
Met Trp Met Asn Ser Ile Leu Pro Ile Phe Leu Phe Arg Ser Val Arg
1               5               10              15

Leu Leu Lys Asn Asp Pro Val Asn Leu Gln Lys Phe Ser Tyr Thr Ser
            20              25              30

Glu Asp Glu Ala Trp Lys Thr Tyr Leu Glu Asn Pro Leu Thr Ala Ala
            35              40              45
```

- 23 -

Thr Lys Ala Met Met Arg Val Asn Gly Asp Asp Asp Ser Val Ala Ala
    50   55   60

Leu Ser Phe Leu Tyr Asp Tyr Tyr Met Gly Pro Lys Glu Lys Arg Ile
65   70   75   80

Leu Ser Ser Ser Thr Gly Gly Arg Asn Asp Gln Gly Lys Arg Tyr Tyr
                85   90   95

His Gly Met Glu Tyr Glu Thr Asp Leu Thr Pro Leu Glu Ser Pro Thr
            100   105   110

His Leu Met Lys Xaa Leu Thr Glu Asn Val Ser Gly Thr Pro Glu Tyr
        115   120   125

Pro Asp Leu Leu Lys Lys Asn Asn Leu Met Ser Leu Glu Gly Ala Leu
    130   135   140

Pro Thr Pro Gly Lys Ala Ala Pro Leu Pro Ala Gly Pro Ser Lys Leu
145   150   155   160

Glu Ala Gly Ser Val Asp Ser Tyr Leu Leu Pro Xaa Thr Asp Met Tyr
                165   170   175

Asp Asn Gly Ser Leu Asn Ser Leu Phe Glu Ser Ile His Gly Val Pro
                180   185   190

Pro Thr Gln Arg Trp Gln Pro Asp Ser Thr Phe Lys Asp Asp Pro Gln
        195   200   205

Glu Ser Met Leu Phe Pro Asp Ile Leu Lys Thr Ser Pro Glu Pro Pro
    210   215   220

Cys Pro Glu Asp Tyr Pro Ser Leu Lys Ser Asp Phe Glu Tyr Thr Leu
225   230   235   240

Gly Ser Pro Lys Ala Ile His Ile Lys Ser Gly Glu Ser Pro Met Ala
                245   250   255

Tyr Leu Asn Lys Gly Gln Phe Tyr Pro Val Thr Leu Arg Thr Pro Ala
            260   265   270

Gly Gly Lys Gly Leu Ala Leu Ser Ser Asn Lys Val Lys Ser Val Val

- 24 -

```
        275                    280                    285

Met Val Val Phe Asp Asn Glu Lys Val Pro Val Glu Gln Leu Arg Phe
    290             295             300

Trp Lys His Trp His Ser Arg Gln Pro Thr Ala Lys Gln Arg Val Ile
305             310             315             320

Asp Val Ala Asp Cys Lys Glu Asn Phe Asn Thr Val Glu His Ile Glu
                325             330             335

Glu Val Ala Tyr Asn Ala Leu Ser Phe Val Trp Asn Val Asn Glu Glu
            340             345             350

Ala Lys Val Phe Ile Gly Val Asn Cys Leu Ser Thr Asp Phe Ser Ser
        355             360             365

Gln Lys Gly Val Lys Gly Val Pro Leu Asn Leu Gln Ile Asp Thr Tyr
    370             375             380

Asp Cys Gly Leu Gly Thr Glu Arg Leu Val His Arg Ala Val Cys Gln
385             390             395             400

Ile Lys Ile Phe Cys Asp Lys Gly Ala Glu Arg Lys Met Arg Asp Asp
                405             410             415

Glu Arg Lys Gln Phe Arg Arg Lys Val Lys Cys Pro Asp Ser Ser Asn
            420             425             430

Ser Gly Val Lys Gly Cys Leu Leu Ser Gly Phe Arg Gly Asn Glu Thr
        435             440             445

Thr Tyr Leu Arg Pro Glu Thr Asp Leu Glu Thr Pro Pro Val Leu Phe
    450             455             460

Ile Pro Asn Val His Phe Ser Ser Leu Gln Arg Ser Gly Gly Ala Ala
465             470             475             480

Pro Ser Ala Gly Pro Ser Ser Ser Asn Arg Leu Pro Leu Lys Arg Thr
                485             490             495

Cys Ser Pro Phe Thr Glu Glu Phe Glu Pro Leu Pro Ser Lys Gln Ala
            500             505             510
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Lys Glu Gly Asp Leu Gln Arg Val Leu Leu Tyr Val Arg Arg Glu Thr
        515                 520                 525

Glu Glu Val Phe Asp Ala Leu Met Leu Lys Thr Pro Asp Leu Lys Gly
        530                 535                 540

Leu Arg Asn Ala Ile Ser Glu Lys Tyr Gly Phe Pro Glu Glu Asn Ile
545                 550                 555                 560

Tyr Lys Val Tyr Lys Lys Cys Lys Arg Gly Ile Leu Val Asn Met Asp
                565                 570                 575

Asn Asn Ile Ile Gln His Tyr Ser Asn His Val Ala Phe Leu Leu Asp
                580                 585                 590

Met Gly Glu Leu Asp Gly Lys Ile Gln Ile Ile Leu Lys Glu Leu
        595                 600                 605
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caagtgctga aaaacgtgcc cttcaacatc gtcctccccc atagcaacca gctgggcatt    180

gataagagag gccatctgac agctcccgat acaacagtca ctgtctccat agcgaccatg    240

cctacccact ccatcaagac agaaatccag ccgcacggct tgctgtggg aatccctcca    300

gccgtgtacc actctgagcc caccgaacgc gtggtggttt ttgaccggag cctcagcact    360

gatcagttca gctctggcac tcagccccc aatgctcagc ggaggactcc agactccacc    420
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- 26 -

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cggatgccgg gcatgaattc agaggactat gtctttgaca atgtttctgg gaacaacttt      540

gagtataccc tggaagcctc caagtcactg cggcagaagc aaggggacag cactatgaca      600

tacctgaata aaggccagtt ctatcctgtc accttaaagg aaggaagcag caatgaaggg      660

attcaccacc ctatcagcaa agttcgaagt gtgatcatgg tggttttgc tgaagacaaa       720

agcagagaag accagctgag acactggaag tactggcact cccgtcagca cacggccaaa      780

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gagatagctt ataacgccat ttccttcacg tgggacatca atgatgaggc aaaggtcttc      900

atctctgtga actgcttgag cacagatttc tcttctcaga agggtgtgaa gggcttgcca      960

ctcaacattc aaatcgacac atacagctat aacaaccgca gcaacaagcc ggttcaccgg     1020

gcctactgcc agataaaggt cttctgcgac aagggagctg aaaggaaaat tcgggatgaa     1080

gaacgaaaac agagcaagag aaaagtgtct gacgttaaag tgcagctgct tccctcacac     1140

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acctgctcca ctacctgtca aagtctgcct gtgtccataa gagtggtggg ctactggctg      1980

gcgagagagg ggaaggcagt agcttgtctt tgaggctttt gtgttctcgc ctgacctcag      2040

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- 27 -

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aagttagctc tgttaaagct gcgttgtata taagtgcaat atcttttga aggtctgcct      2280

gtaaatgtgt acatatatgt ctgatataaa tatataatat ataaatgcgg tgtctgtgta      2340

cagatagtga aggcgagcag gaagatctac cttgaaatcc ctcttagaga agaggttaag      2400

ttattattga taatgtggac caagcaggta gaacgctgtt ttcccaaaaa caagcaagtg      2460

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tcaccgtgtg ggtttctgca ccctgagtgg agctaatgga agactggact gcagctacta      2580

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gggaatgttt tgtgcacact aaatatttta agaacaaaac gaaactttac aatgtaaytt      2820

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aagtatgtga acaaaatagc tggttttnta agatacggga tacgggtcat ataacaatat      3000

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Val Thr Glu Gln Pro Leu Ile Ser Ala Gly Glu Asn Arg Val Gln Val
            20                  25                  30


Leu Lys Asn Val Pro Phe Asn Ile Val Leu Pro His Ser Asn Gln Leu
        35                  40                  45


Gly Ile Asp Lys Arg Gly His Leu Thr Ala Pro Asp Thr Thr Val Thr
    50                  55                  60
```

- 28 -

```
Val Ser Ile Ala Thr Met Pro Thr His Ser Ile Lys Thr Glu Ile Gln
65                70              75                    80


Pro His Gly Phe Ala Val Gly Ile Pro Pro Ala Val Tyr His Ser Glu
                85              90                    95


Pro Thr Glu Arg Val Val Val Phe Asp Arg Ser Leu Ser Thr Asp Gln
              100             105             110


Phe Ser Ser Gly Thr Gln Pro Pro Asn Ala Gln Arg Arg Thr Pro Asp
          115             120             125


Ser Thr Phe Ser Glu Thr Phe Lys Glu Gly Val Gln Glu Val Phe Phe
      130             135             140


Pro Ser Glu Leu Ser Leu Arg Met Pro Gly Met Asn Ser Glu Asp Tyr
145             150             155             160


Val Phe Asp Asn Val Ser Gly Asn Asn Phe Glu Tyr Thr Leu Glu Ala
              165             170             175


Ser Lys Ser Leu Arg Gln Lys Gln Gly Asp Ser Thr Met Thr Tyr Leu
          180             185             190


Asn Lys Gly Gln Phe Tyr Pro Val Thr Leu Lys Glu Gly Ser Ser Asn
      195             200             205


Glu Gly Ile His His Pro Ile Ser Lys Val Arg Ser Val Ile Met Val
210             215             220


Val Phe Ala Glu Asp Lys Ser Arg Glu Asp Gln Leu Arg His Trp Lys
225             230             235             240


Tyr Trp His Ser Arg Gln His Thr Ala Lys Gln Arg Cys Ile Asp Ile
              245             250             255


Ala Asp Tyr Lys Glu Ser Phe Asn Thr Ile Ser Asn Ile Glu Glu Ile
          260             265             270


Ala Tyr Asn Ala Ile Ser Phe Thr Trp Asp Ile Asn Asp Glu Ala Lys
          275             280             285
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- 29 -

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Val Phe Ile Ser Val Asn Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys
    290               295             300

Gly Val Lys Gly Leu Pro Leu Asn Ile Gln Ile Asp Thr Tyr Ser Tyr
305               310               315               320

Asn Asn Arg Ser Asn Lys Pro Val His Arg Ala Tyr Cys Gln Ile Lys
                  325               330               335

Val Phe Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg Asp Glu Glu Arg
              340               345               350

Lys Gln Ser Lys Arg Lys Val Ser Asp Val Lys Val Gln Leu Leu Pro
          355               360               365

Ser His Lys Arg Thr Asp Ile Thr Val Phe Lys Pro Phe Leu Asp Leu
    370               375               380

Asp Thr Gln Pro Val Leu Phe Ile Pro Asp Val His Phe Thr Asn Leu
385               390               395               400

Gln Arg Gly Ser His Val Leu Ser Leu Pro Ser Glu Glu Leu Glu Gly
              405               410               415

Glu Gly Ser Val Leu Lys Arg Gly Pro Phe Gly Thr Glu Asp Asp Phe
              420               425               430

Gly Val Pro Pro Pro Ala Lys Leu Thr Arg Thr Glu Glu Pro Lys Arg
          435               440               445

Val Leu Leu Tyr Val Arg Lys Glu Ser Glu Glu Val Phe Asp Ala Leu
    450               455               460

Met Leu Lys Thr Pro Ser Leu Lys Gly Leu Met Glu Ala Ile Ser Asp
465               470               475               480

Lys Tyr Asp Val Pro His Asp Lys Ile Gly Lys Ile Phe Lys Lys Cys
              485               490               495

Lys Lys Gly Ile Leu Val Asn Met Asp Asp Asn Ile Val Lys His Tyr
          500               505               510

Ser Asn Glu Asp Thr Phe Gln Leu Gln Ile Glu Glu Ala Gly Gly Ser
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- 30 -

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Tyr Lys Leu Thr Leu Thr Glu Ile
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tacccacagc ggcgctccta taccagtgag gatgaagcct ggaagtcgtt cctggaaaac    240

cctctcactg cggcaaccaa agcgatgatg agcatcaacg gagacgaaga cagcgcggct    300

gcgctgggcc tgctctatga ctactacaag gtccccagag agcgccggtc atcagccgta    360

aagcccgagg gagagcaccc agagccagag cacagcaaaa gaaacagcat accaaatgtg    420

acggagcagc ccctcatttc tgctggagaa aacagggtac aagtgctgaa aaacgtgccc    480

ttcaacatcg tcctccccca tagcaaccag ctgggcattg ataagagagg ccatctgaca    540

gctcccgata caacagtcac tgtctccata gcgaccatgc ctacccactc catcaagaca    600

gaaatccagc cgcacggctt tgctgtggga atccctccag ccgtgtacca ctctgagccc    660

accgaacgcg tggtggtttt tgaccggagc ctcagcactg atcagttcag ctctggcact    720

cagcccccca atgctcagcg gaggactcca gactccacct tctccgagac cttcaaggag    780

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gaggactatg tctttgacaa tgtttctggg aacaactttg agtataccct ggaagcctcc    900

aagtcactgc ggcagaagca aggggacagc actatgacat acctgaataa aggccagttc    960
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cactggaagt   actggcactc   ccgtcagcac   acggccaaac   agaggtgcat   tgacattgct   1140

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- 32 -

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attgttagcg gtatacgtar gttaaaaagt actctaatga agtatgtgaa caaaatagct    3300

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            20              25              30


Trp Lys Ser Phe Leu Glu Asn Pro Leu Thr Ala Ala Thr Lys Ala Met
        35              40              45


Met Ser Ile Asn Gly Asp Glu Asp Ser Ala Ala Ala Leu Gly Leu Leu
    50              55              60


Tyr Asp Tyr Tyr Lys Val Pro Arg Glu Arg Arg Ser Ser Ala Val Lys
65              70              75              80


Pro Glu Gly Glu His Pro Glu Pro Glu His Ser Lys Arg Asn Ser Ile
            85              90              95
```

```
Pro Asn Val Thr Glu Gln Pro Leu Ile Ser Ala Gly Glu Asn Arg Val
        100                 105                 110

Gln Val Leu Lys Asn Val Pro Phe Asn Ile Val Leu Pro His Ser Asn
        115                 120                 125

Gln Leu Gly Ile Asp Lys Arg Gly His Leu Thr Ala Pro Asp Thr Thr
        130                 135                 140

Val Thr Val Ser Ile Ala Thr Met Pro Thr His Ser Ile Lys Thr Glu
145                 150                 155                 160

Ile Gln Pro His Gly Phe Ala Val Gly Ile Pro Pro Ala Val Tyr His
                165                 170                 175

Ser Glu Pro Thr Glu Arg Val Val Val Phe Asp Arg Ser Leu Ser Thr
                180                 185                 190

Asp Gln Phe Ser Ser Gly Thr Gln Pro Pro Asn Ala Gln Arg Arg Thr
        195                 200                 205

Pro Asp Ser Thr Phe Ser Glu Thr Phe Lys Glu Gly Val Gln Glu Val
        210                 215                 220

Phe Phe Pro Ser Glu Leu Ser Leu Arg Met Pro Gly Met Asn Ser Glu
225                 230                 235                 240

Asp Tyr Val Phe Asp Asn Val Ser Gly Asn Asn Phe Glu Tyr Thr Leu
                245                 250                 255

Glu Ala Ser Lys Ser Leu Arg Gln Lys Gln Gly Asp Ser Thr Met Thr
        260                 265                 270

Tyr Leu Asn Lys Gly Gln Phe Tyr Pro Val Thr Leu Lys Glu Gly Ser
        275                 280                 285

Ser Asn Glu Gly Ile His His Pro Ile Ser Lys Val Arg Ser Val Ile
        290                 295                 300

Met Val Val Phe Ala Glu Asp Lys Ser Arg Glu Asp Gln Leu Arg His
305                 310                 315                 320
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- 34 -

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Trp Lys Tyr Trp His Ser Arg Gln His Thr Ala Lys Gln Arg Cys Ile
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              340               345               350

Glu Ile Ala Tyr Asn Ala Ile Ser Phe Thr Trp Asp Ile Asn Asp Glu
              355               360               365

Ala Lys Val Phe Ile Ser Val Asn Cys Leu Ser Thr Asp Phe Ser Ser
              370               375               380

Gln Lys Gly Val Lys Gly Leu Pro Leu Asn Ile Gln Ile Asp Thr Tyr
385               390               395               400

Ser Tyr Asn Asn Arg Ser Asn Lys Pro Val His Arg Ala Tyr Cys Gln
              405               410               415

Ile Lys Val Phe Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg Asp Glu
              420               425               430

Glu Arg Lys Gln Ser Lys Arg Lys Val Ser Asp Val Lys Val Gln Leu
              435               440               445

Leu Pro Ser His Lys Arg Thr Asp Ile Thr Val Phe Lys Pro Phe Leu
450               455               460

Asp Leu Asp Thr Gln Pro Val Leu Phe Ile Pro Asp Val His Phe Thr
465               470               475               480

Asn Leu Gln Arg Gly Ser His Val Leu Ser Leu Pro Ser Glu Glu Leu
              485               490               495

Glu Gly Glu Gly Ser Val Leu Lys Arg Gly Pro Phe Gly Thr Glu Asp
              500               505               510

Asp Phe Gly Val Pro Pro Pro Ala Lys Leu Thr Arg Thr Glu Glu Pro
              515               520               525

Lys Arg Val Leu Leu Tyr Val Arg Lys Glu Ser Glu Glu Val Phe Asp
530               535               540
```

```
Ala Leu Met Leu Lys Thr Pro Ser Leu Lys Gly Leu Met Glu Ala Ile
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Ser Asp Lys Tyr Asp Val Pro His Asp Lys Ile Gly Lys Ile Phe Lys
                565             570             575

Lys Cys Lys Lys Gly Ile Leu Val Asn Met Asp Asp Asn Ile Val Lys
            580             585             590

His Tyr Ser Asn Glu Asp Thr Phe Gln Leu Gln Ile Glu Glu Ala Gly
        595             600             605

Gly Ser Tyr Lys Leu Thr Leu Thr Glu Ile
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gccttagtgc ccatgcccag tgaccctccc ttcaacaccc gaagagccta cacaagtgag   180

gatgaggcct ggaagtcata tctggagaac cccctgactg cggccaccaa ggcgatgatg   240

agcatcaacg gggacgagga cagtgctgcc gccctgggcc tgctctatga ctactacaag   300

gttcctcgag acaagagact tctgtctgtg agcaaagcaa gtgacagcca agaagaccag   360

gataaaagaa actgccttgg caccagtgaa gcccagatca atttgagcgg aggcgagaac   420

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aattcgaagc gcgagcagta cagtgtatcc atcaccgaga gctctgccgt catccccgtg   540

tcaggcatca ccgtggtgaa agccgaggat ttcacaccgg tgttcatggc gcccccggtg   600

cactatcccc gcgcggacag tgaggagcag cgcgtggtta tctttgaaca gactcagtac   660

gacctgccct ccatagccag ccacagctcc tatctcaagg acgaccagcg cagcacgccg   720

gacagcacct acagcgagag ctttaaggac ggcgcctcgg agaaatttcg gagtacttct   780

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gaagccacca aatctctccg tcagaaacag ggggagggcc ccatgaccta cctcaacaaa   900

ggacaattct atgccataac actcagtgag actggagaca acaaatgctt ccgacacccc   960
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atcagcaaag tcaggagtgt ggtgatggtg gtctttagtg aagacaaaaa ccgagatgag   1020

cagctgaaat actggaagta ctggcactcc cggcagcaca ctgccaagca gagggtcctt   1080

gacattgctg attacaagga gagcttcaac accatcggga acattgaaga gatcgcatac   1140

aatgctgttt ccttcacctg ggatgtgaac gaggaggcaa agatttttat caccgtgaat   1200

tgcctgagta cagatttctc ctcccaaaag ggtgtaaaag acttcccct gatgattcag    1260

atcgacacgt acagctacaa caaccgcagc aataaaccca tccacagagc atactgccag   1320

atcaaggtct tctgtgacaa gggagcagaa agaaaaatcc gggatgaaga gagaaagcag   1380

aacaggaaga aagggaaggg ccaggcctct caagcccagt gcaacaactc ctctgatggg   1440

aagatggccg ccataccgtt acagaagaag agtgacatca cgtacttcaa aaccatgccc   1500

gacctgcact cacagcctgt gctcttcata ccagatgttc actttgcaaa cctacagagg   1560

accggacagg tttattacaa cacagacgat gagcgagaag cagcagcgt ccttgttaag    1620

cggatgttca ggcccatgga agaggagttt ggtccaacac cgtctaagca gatcaaagaa   1680

gaaaacgtaa aacgagtgct tttatatgtg aggaaggaga cgatgacgt cttcgatgct    1740

ctgatgctga aatcacccac ggtgaagggt ctgatggaag cgctgtctga gaagtatggg   1800

ctgccagtgg agaaaatcac aaagctttat aagaagagca aaaagggcat cctggtcaac   1860

atggatgaca acatcattga gcactattca aatgaggaca ccttcatcct caacatggag   1920

agcatggtgg aaggcttcaa gatcacgctg atggagatct gagccctggg tgtcccctcg   1980

ataggagctt ttggtatact ccttcctggg agagatggga tctctgccgc cccaggacct   2040

ggagacccac ccatctcact cacctctcaa gactgttaca agactgctgg gaagggggc    2100

agggcccaag gcccagtaat ggacttcctt caactcttcc acttgctccc tatggagctg   2160

aagcctgagc ccctcagcaa atttcttctc gtgcc                              2195
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Met Pro Ser Asp Pro Pro Phe Asn Thr Arg Arg Ala Tyr Thr Ser Glu
                20                  25                  30
```

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```
Asp Glu Ala Trp Lys Ser Tyr Leu Glu Asn Pro Leu Thr Ala Ala Thr
        35              40              45

Lys Ala Met Met Ser Ile Asn Gly Asp Glu Asp Ser Ala Ala Ala Leu
    50              55              60

Gly Leu Leu Tyr Asp Tyr Tyr Lys Val Pro Arg Asp Lys Arg Leu Leu
65              70              75              80

Ser Val Ser Lys Ala Ser Asp Ser Gln Glu Asp Gln Asp Lys Arg Asn
            85              90              95

Cys Leu Gly Thr Ser Glu Ala Gln Ile Asn Leu Ser Gly Gly Glu Asn
            100             105             110

Arg Val Gln Val Leu Lys Thr Val Pro Val Asn Leu Cys Leu Ser Gln
        115             120             125

Asp His Met Glu Asn Ser Lys Arg Glu Gln Tyr Ser Val Ser Ile Thr
    130             135             140

Glu Ser Ser Ala Val Ile Pro Val Ser Gly Ile Thr Val Val Lys Ala
145             150             155             160

Glu Asp Phe Thr Pro Val Phe Met Ala Pro Pro Val His Tyr Pro Arg
            165             170             175

Ala Asp Ser Glu Glu Gln Arg Val Val Ile Phe Glu Gln Thr Gln Tyr
        180             185             190

Asp Leu Pro Ser Ile Ala Ser His Ser Ser Tyr Leu Lys Asp Asp Gln
        195             200             205

Arg Ser Thr Pro Asp Ser Thr Tyr Ser Glu Ser Phe Lys Asp Gly Ala
    210             215             220

Ser Glu Lys Phe Arg Ser Thr Ser Val Gly Ala Asp Glu Tyr Thr Tyr
225             230             235             240

Asp Gln Thr Gly Ser Gly Thr Phe Gln Tyr Thr Leu Glu Ala Thr Lys
            245             250             255
```

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```
Ser Leu Arg Gln Lys Gln Gly Glu Gly Pro Met Thr Tyr Leu Asn Lys
            260                 265             270


Gly Gln Phe Tyr Ala Ile Thr Leu Ser Glu Thr Gly Asp Asn Lys Cys
        275                 280             285


Phe Arg His Pro Ile Ser Lys Val Arg Ser Val Val Met Val Val Phe
        290                 295             300


Ser Glu Asp Lys Asn Arg Asp Glu Gln Leu Lys Tyr Trp Lys Tyr Trp
305                 310             315             320


His Ser Arg Gln His Thr Ala Lys Gln Arg Val Leu Asp Ile Ala Asp
                325                 330             335


Tyr Lys Glu Ser Phe Asn Thr Ile Gly Asn Ile Glu Glu Ile Ala Tyr
            340                 345             350


Asn Ala Val Ser Phe Thr Trp Asp Val Asn Glu Glu Ala Lys Ile Phe
        355                 360             365


Ile Thr Val Asn Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Val
    370                 375             380


Lys Gly Leu Pro Leu Met Ile Gln Ile Asp Thr Tyr Ser Tyr Asn Asn
385                 390             395             400


Arg Ser Asn Lys Pro Ile His Arg Ala Tyr Cys Gln Ile Lys Val Phe
                405             410             415


Cys Asp Lys Gly Ala Glu Arg Lys Ile Arg Asp Glu Glu Arg Lys Gln
            420                 425             430


Asn Arg Lys Lys Gly Lys Gly Gln Ala Ser Gln Ala Gln Cys Asn Asn
        435                 440             445


Ser Ser Asp Gly Lys Met Ala Ala Ile Pro Leu Gln Lys Lys Ser Asp
        450                 455             460


Ile Thr Tyr Phe Lys Thr Met Pro Asp Leu His Ser Gln Pro Val Leu
465                 470                 475             480
```

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Phe Ile Pro Asp Val His Phe Ala Asn Leu Gln Arg Thr Gly Gln Val
                485   490   495

Tyr Tyr Asn Thr Asp Asp Glu Arg Glu Gly Ser Ser Val Leu Val Lys
                500   505   510

Arg Met Phe Arg Pro Met Glu Glu Glu Phe Gly Pro Thr Pro Ser Lys
        515   520   525

Gln Ile Lys Glu Glu Asn Val Lys Arg Val Leu Leu Tyr Val Arg Lys
    530   535   540

Glu Asn Asp Asp Val Phe Asp Ala Leu Met Leu Lys Ser Pro Thr Val
545   550   555   560

Lys Gly Leu Met Glu Ala Leu Ser Glu Lys Tyr Gly Leu Pro Val Glu
                565   570   575

Lys Ile Thr Lys Leu Tyr Lys Lys Ser Lys Lys Gly Ile Leu Val Asn
                580   585   590

Met Asp Asp Asn Ile Ile Glu His Tyr Ser Asn Glu Asp Thr Phe Ile
        595   600   605

Leu Asn Met Glu Ser Met Val Glu Gly Phe Lys Ile Thr Leu Met Glu
    610   615   620

Ile
625

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<213> murine

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<222> (200)..(2008)
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<223> n = any nucleotide

- 40 -

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gaggagaatt aagagacgag tggtcagcag cgcctgcgag ccaaccagag acggatcgct   180

ggaacctcgg agaaggaag atg tcg aat gaa ctt gat ttc agg tct gtg cgg   232
                      Met Ser Asn Glu Leu Asp Phe Arg Ser Val Arg
                      1   5   10

ttg ctg aag aat gac cct gtg agc ttc cag aag ttt ccc tac agt aat   280
Leu Leu Lys Asn Asp Pro Val Ser Phe Gln Lys Phe Pro Tyr Ser Asn
            15   20   25

gag gac gag gcc tgg aag aca tac ctg gag aac cct ttg acg gct gcc   328
Glu Asp Glu Ala Trp Lys Thr Tyr Leu Glu Asn Pro Leu Thr Ala Ala
        30   35   40

acc aaa gcc atg atg aga gtc aac ggg gac gag gag agt gtg gct gct   376
Thr Lys Ala Met Met Arg Val Asn Gly Asp Glu Glu Ser Val Ala Ala
    45   50   55

ctg agc ttc ctc tac gac tac tat atg ggt ccc aag gag aag cgg ata   424
Leu Ser Phe Leu Tyr Asp Tyr Tyr Met Gly Pro Lys Glu Lys Arg Ile
60   65   70   75

ctg tcc tcc agc act ggt ggc cgg aat gac caa gga aag aag ttc tac   472
Leu Ser Ser Ser Thr Gly Gly Arg Asn Asp Gln Gly Lys Lys Phe Tyr
                80   85   90

cac agc atg gac tat gag ccg gat ctt gcc ccc ctc gag agc ccc aca   520
His Ser Met Asp Tyr Glu Pro Asp Leu Ala Pro Leu Glu Ser Pro Thr
            95   100   105

cac ctc atg aaa ttt ttg aca gag aac gtg tct gga agt cca gac tac   568
His Leu Met Lys Phe Leu Thr Glu Asn Val Ser Gly Ser Pro Asp Tyr
            110   115   120

aca gac cag ctc aag aaa aac aat ctg cta ggc ttg gag ggg gtt cta   616
Thr Asp Gln Leu Lys Lys Asn Asn Leu Leu Gly Leu Glu Gly Val Leu
        125   130   135

ccc acc ccc ggc aag acc aat acc gtc ccc cca ggt ccg agt aaa ctg   664
Pro Thr Pro Gly Lys Thr Asn Thr Val Pro Pro Gly Pro Ser Lys Leu
140   145   150   155

gaa gcc agc tcc atg gac agc tac ctc ttg ccc gcc agt gac ata tat   712
Glu Ala Ser Ser Met Asp Ser Tyr Leu Leu Pro Ala Ser Asp Ile Tyr
                160   165   170

gac aat ggc tcc ctc aac tca tta ttt gag agc att cat ggg gtt cca   760
Asp Asn Gly Ser Leu Asn Ser Leu Phe Glu Ser Ile His Gly Val Pro
            175   180   185

ccc aca cag cgc tgg cag cca gac agc acc ttc aaa gat gac cca cag   808
Pro Thr Gln Arg Trp Gln Pro Asp Ser Thr Phe Lys Asp Asp Pro Gln

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```
                190                    195                    200

    gag tct ctg ctc ttc cct gat att ctg aag aca tcc ccg gac ccc cca    .    856
    Glu Ser Leu Leu Phe Pro Asp Ile Leu Lys Thr Ser Pro Asp Pro Pro
        205                    210                    215

    tgc cca gag gat tat cca ggc ctc aag agt gac ttt gaa tac acc ctg         904
    Cys Pro Glu Asp Tyr Pro Gly Leu Lys Ser Asp Phe Glu Tyr Thr Leu
    220                    225                    230                235

    ggc tcc ccc aaa gcc att cac atc aaa gca ggg gag tca ccc atg gcc         952
    Gly Ser Pro Lys Ala Ile His Ile Lys Ala Gly Glu Ser Pro Met Ala
                240                    245                    250

    tac ctc aac aag ggt cag ttc tac ccc gtc acc cta cgc acc cca gca        1000
    Tyr Leu Asn Lys Gly Gln Phe Tyr Pro Val Thr Leu Arg Thr Pro Ala
                255                    260                    265

    gga ggg aaa ggc ctc gct ctg tcc tcc agc aaa gtc aag agc gtg gtg        1048
    Gly Gly Lys Gly Leu Ala Leu Ser Ser Ser Lys Val Lys Ser Val Val
                270                    275                    280

    atg gtc gtg ttc gat aat gac aag gtc ccc gtg gag cag ctg cgt ttc        1096
    Met Val Val Phe Asp Asn Asp Lys Val Pro Val Glu Gln Leu Arg Phe
        285        .                290        .            295

    tgg agg cac tgg cat tcc cgg cag ccc acc gcc aag cag cgc gtc atc        1144    .
    Trp Arg His Trp His Ser Arg Gln Pro Thr Ala Lys Gln Arg Val Ile
    300                    305                    310                315

    gac gta gct gac tgt aag gaa aac ttc aac acg gtc cag cac att gaa        1192
    Asp Val Ala Asp Cys Lys Glu Asn Phe Asn Thr Val Gln His Ile Glu
                320                    325                    330

    gag gtg gcc tat aac gcg ctg tcc ttt gtg tgg aat gtc aac gag gaa        1240
    Glu Val Ala Tyr Asn Ala Leu Ser Phe Val Trp Asn Val Asn Glu Glu
                335                    340                    345    .

    gcc aag gtg ttt atc ggt gtc aac tgt ctg agc aca gac ttc tcc tcg        1288
    Ala Lys Val Phe Ile Gly Val Asn Cys Leu Ser Thr Asp Phe Ser Ser
                350                    355                    360

    cag aag gga gtg aag ggt gtc ccc ctg aac ttg caa att gac acc tat        1336
    Gln Lys Gly Val Lys Gly Val Pro Leu Asn Leu Gln Ile Asp Thr Tyr
        365                    370                    375

    gac tgt gga gca ggc act gag cgc ctg gta cac cgt gct gtc tgc cag        1384
    Asp Cys Gly Ala Gly Thr Glu Arg Leu Val His Arg Ala Val Cys Gln
    380                    385                    390                395

    atc aag atc ttc tgt gat aag gga gct gag agg aag atg cgc gat gat        1432
    Ile Lys Ile Phe Cys Asp Lys Gly Ala Glu Arg Lys Met Arg Asp Asp
                400                    405                    410

    gaa cgg aag cag ttt cga agg aag gtc aag tgc cca gac tcc agt aac        1480
    Glu Arg Lys Gln Phe Arg Arg Lys Val Lys Cys Pro Asp Ser Ser Asn
        415                    420                    425
```

```
aat gca gga atc aag ggc tgc ctg ctg tca ggc ttc agg ggc aat gag    1528
Asn Ala Gly Ile Lys Gly Cys Leu Leu Ser Gly Phe Arg Gly Asn Glu
        430             435             440

acc aca tac ttg cgg cca gaa act gac ctg gag acc cag cct gtg ttg    1576
Thr Thr Tyr Leu Arg Pro Glu Thr Asp Leu Glu Thr Gln Pro Val Leu
    445             450             455

ttt atc ccc aat ctg cat ttt tcc agc cta cag cgc cca gga ggg gtt    1624
Phe Ile Pro Asn Leu His Phe Ser Ser Leu Gln Arg Pro Gly Gly Val
460             465             470             475

gtc ccc tca gca gga cac agc agc tct gac agg ctg cct ctg aag cga    1672
Val Pro Ser Ala Gly His Ser Ser Ser Asp Arg Leu Pro Leu Lys Arg
            480             485             490

acc tgc tca ccc ttt gct gag gag ttt gag cct ctt cct tct aaa caa    1720
Thr Cys Ser Pro Phe Ala Glu Glu Phe Glu Pro Leu Pro Ser Lys Gln
                495             500             505

gcc aag gaa gat gac ctt cag aga gtt ctg ttg tat gtg agg agg gag    1768
Ala Lys Glu Asp Asp Leu Gln Arg Val Leu Leu Tyr Val Arg Arg Glu
            510             515             520

aca gag gag gtg ttt gac gcg ctc atg ttg aag acc ccg gac ctg aag    1816
Thr Glu Glu Val Phe Asp Ala Leu Met Leu Lys Thr Pro Asp Leu Lys
    525             530             535

ggc ctg agg aat gcg atc tct gag aag tac ggc ctc ccc gag gag aat    1864
Gly Leu Arg Asn Ala Ile Ser Glu Lys Tyr Gly Leu Pro Glu Glu Asn
540             545             550             555

att tgc aaa gtc tac aag aaa tgc aag cga ggc atc ctg gtt aac atg    1912
Ile Cys Lys Val Tyr Lys Lys Cys Lys Arg Gly Ile Leu Val Asn Met
                560             565             570

gac aac aac atc atc caa cac tac agc aac cac gtg gcc ttc ctg ctg    1960
Asp Asn Asn Ile Ile Gln His Tyr Ser Asn His Val Ala Phe Leu Leu
            575             580             585

gac atg ggt gag ctg gac ggc aag atc cag atc atc ctg aag gag cta    2008
Asp Met Gly Glu Leu Asp Gly Lys Ile Gln Ile Ile Leu Lys Glu Leu
        590             595             600

tgagggcccg gcctcaagcg tcccacaccc ggggcccggc tcaagccacg tacaacctct    2068

tctgtgtcag ctgttacttg aaatgccttt ctttgggaaa gaggtctcgc aagcaaccaa    2128

ctcggtgatg tccaagccag ggagagacca agaaggttcc aggatctaaa tgtcccaccc    2188

aggctcgaac tcactccaga gcttcctgaa agcacccagc ccaccggaga gtctgagcaa    2248

cacagaccca actgcctgct ttctcttcta agtcccgctg cagaggccct tacaggggac    2308

gggggtcaca ccaccttctc tgcagggcta cacccgctgt ctcgatcggt tctgacgttc    2368
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actgtttcct ttctaccaac ttcagaccag agagttctca cactttggcc aaataacttg    2428

aaaactcgtg actttcacag cagatgcctt tgtgaggccc ttggagagga aactttctta    2488

ttgacttcct cggcacaaga tgtaagtcac catcatcgag ctgacaggaa caaataccct    2548

tgccacctac tgttgtacac atttcttatt tacagttttc attatgtgat tatatatata    2608

tatatgtaag tatatattat gtacatatat gcaacatttt gtatgtccat gttacatttt    2668

tatcatttca aaaatatgta tttcatattt cttgaactat ttttttagct gttattcgat    2728

tatgcatttt gtatatcata gggtttagta ataaaagcct acccatgcac acttaaaaaa    2788

aaaaaaaaaa aaatatcnag cttatcgata ccgtcgacct cga                      2831
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<223>    n = any nucleotide

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Pro Val Ser Phe Gln Lys Phe Pro Tyr Ser Asn Glu Asp Glu Ala Trp
                20                  25                  30

Lys Thr Tyr Leu Glu Asn Pro Leu Thr Ala Ala Thr Lys Ala Met Met
            35                  40                  45

Arg Val Asn Gly Asp Glu Glu Ser Val Ala Ala Leu Ser Phe Leu Tyr
        50                  55                  60

Asp Tyr Tyr Met Gly Pro Lys Glu Lys Arg Ile Leu Ser Ser Ser Thr
65                  70                  75                  80

Gly Gly Arg Asn Asp Gln Gly Lys Lys Phe Tyr His Ser Met Asp Tyr
                85                  90                  95

Glu Pro Asp Leu Ala Pro Leu Glu Ser Pro Thr His Leu Met Lys Phe
                100                 105                 110
```

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Leu Thr Glu Asn Val Ser Gly Ser Pro Asp Tyr Thr Asp Gln Leu Lys
        115   120   125

Lys Asn Asn Leu Leu Gly Leu Glu Gly Val Leu Pro Thr Pro Gly Lys
    130   135   140

Thr Asn Thr Val Pro Pro Gly Pro Ser Lys Leu Glu Ala Ser Ser Met
145   150   155   160

Asp Ser Tyr Leu Leu Pro Ala Ser Asp Ile Tyr Asp Asn Gly Ser Leu
            165   170   175

Asn Ser Leu Phe Glu Ser Ile His Gly Val Pro Pro Thr Gln Arg Trp
            180   185   190

Gln Pro Asp Ser Thr Phe Lys Asp Asp Pro Gln Glu Ser Leu Leu Phe
            195   200   205

Pro Asp Ile Leu Lys Thr Ser Pro Asp Pro Pro Cys Pro Glu Asp Tyr
    210   215   220

Pro Gly Leu Lys Ser Asp Phe Glu Tyr Thr Leu Gly Ser Pro Lys Ala
225   230   235   240

Ile His Ile Lys Ala Gly Glu Ser Pro Met Ala Tyr Leu Asn Lys Gly
            245   250   255

Gln Phe Tyr Pro Val Thr Leu Arg Thr Pro Ala Gly Gly Lys Gly Leu
            260   265   270

Ala Leu Ser Ser Ser Lys Val Lys Ser Val Val Met Val Val Phe Asp
            275   280   285

Asn Asp Lys Val Pro Val Glu Gln Leu Arg Phe Trp Arg His Trp His
    290   295   300

Ser Arg Gln Pro Thr Ala Lys Gln Arg Val Ile Asp Val Ala Asp Cys
305   310   315   320

Lys Glu Asn Phe Asn Thr Val Gln His Ile Glu Glu Val Ala Tyr Asn
            325   330   335

Ala Leu Ser Phe Val Trp Asn Val Asn Glu Glu Ala Lys Val Phe Ile

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```
                340                    345                        350


Gly Val Asn Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Val Lys
        355                 360                 365


Gly Val Pro Leu Asn Leu Gln Ile Asp Thr Tyr Asp Cys Gly Ala Gly
        370                 375                 380


Thr Glu Arg Leu Val His Arg Ala Val Cys Gln Ile Lys Ile Phe Cys
 385                 390                 395                 400


Asp Lys Gly Ala Glu Arg Lys Met Arg Asp Asp Glu Arg Lys Gln Phe
                405                 410                 415


Arg Arg Lys Val Lys Cys Pro Asp Ser Ser Asn Asn Ala Gly Ile Lys
                420                 425                 430


Gly Cys Leu Leu Ser Gly Phe Arg Gly Asn Glu Thr Thr Tyr Leu Arg
        435                 440                 445


Pro Glu Thr Asp Leu Glu Thr Gln Pro Val Leu Phe Ile Pro Asn Leu
        450                 455                 460


His Phe Ser Ser Leu Gln Arg Pro Gly Gly Val Val Pro Ser Ala Gly
 465                 470                 475                 480


His Ser Ser Ser Asp Arg Leu Pro Leu Lys Arg Thr Cys Ser Pro Phe
                485                 490                 495


Ala Glu Glu Phe Glu Pro Leu Pro Ser Lys Gln Ala Lys Glu Asp Asp
                500                 505                 510


Leu Gln Arg Val Leu Leu Tyr Val Arg Arg Glu Thr Glu Glu Val Phe
        515                 520                 525


Asp Ala Leu Met Leu Lys Thr Pro Asp Leu Lys Gly Leu Arg Asn Ala
        530                 535                 540


Ile Ser Glu Lys Tyr Gly Leu Pro Glu Glu Asn Ile Cys Lys Val Tyr
 545                 550                 555                 560


Lys Lys Cys Lys Arg Gly Ile Leu Val Asn Met Asp Asn Asn Ile Ile
                565                 570                 575
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Gln His Tyr Ser Asn His Val Ala Phe Leu Leu Asp Met Gly Glu Leu
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gcagcaacat caaatgttag gccaaaatgc acaaaccgcc agcaacaaag gcagcaccaa   180

gcgaacgaaa caacaacagc tccacatacc acaaagagtg gcacattaga agcggccaaa   240

agcagccagc cgagagcatt gtgtaagcca aaggcccaga gagccaggct aaaagccccc   300

agacgcacaa caacaacaac aacaactaaa acagcacaaa gagtggcgaa aggtgcaccc   360

accagcaaaa cagcaacaac ggagcaacca acaacagcag cagcagcagc agcagccaca   420

tttcagttac agctccagac tcccaggttg cagactccca aagcaaacag actccagtcc   480

acgatccagc tccagttcca ccgatccgat ccactgctcc agcgtgctcg agtgccatag   540

atcctcacca agtgccaaaa tccgcatcct gatcccaaga gctcaaggca ccccggccca   600

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acaacgacta agacgaagat cgaccatcca gaaccggagg gagctaattg cgaacgaaag   720

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ccagcagccg aggcagcaac agcaatagca acaaccatag gggatcacgg catcgatgat   840

cagtccacga ccaagtccta gtgcaatccg gaatccagtt caaattagtt caataagccg   900

tatctaccac gtataatgtc cacatccacc gccacaacga gcgttatcac gtccaacgag   960

ctctcgctgt ccggccacgc ccacggtcac ggtcacgccc accagttgca ccagcacacc   1020

cacagccgcc taggagttgg cgttggtgtt ggcatcctta gcgacgcatc cctatcgccc   1080

atccaacaag gcagtggcgg ccacagcggc ggaggtaaca caaacagttc accactggcg   1140

cccaacggag tgccacttct cacaacaatg caccgatcac cggactcacc gcagccagaa   1200

ttggccacca tgacgaacgt caacgtgctg gatctgcaca cggataactc caagctgtac   1260

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gacaaggagg ctgtatttat atacgaaacg cccaaggtgg tgatgccagc ggatggcggg    1320

ggtggcaata attccgatga aggtcatgcc atcgatgcgc ggattgcggc ccaaatgggc    1380

aaccaagccc agcaacagca gcagcagcaa cagcagacgg aacaccagcc gctggccaag    1440

atcgagttcg atgagaacca gataatccgg gtggtgggac caaatggcga gcaacagcaa    1500

atcatctcgc gggagatcat caatggggag catcatatcc tgtcgcgaaa cgaggctggt    1560

gagcacattc tcacacggat cgtcagtgat ccctccaagt tgatgcccaa tgacaatgca    1620

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tatcagacat caccattgcc gctagacgcg tctgtattgc attatagtgg cggcaatgat    1740

tcgaatgtaa ttaagacgga ggccgatatc tacgaggatc acaagaaaca tgcggctgca    1800

gcagcagctg ctgccggcgg aggatccatc atatacacca catccgatcc gaacggagtg    1860

aatgtgaaac aactgcccca tttgacggta ccccaaaaac ttgatcccga cctctatcaa    1920

gccgataagc atatagattt gatctacaac gatggcagca agacggtgat ttactccact    1980

acggatcaga agagtttgga aatatactcg ggcggcgaca tcggcagcct ggtgtccgac    2040

ggccaagtgg tggtccaggc gggactgccg tatgccacca ccaccggagc cggcggccag    2100

cccgtctata tcgtggccga cggtgccttg ccagcgggag tcgaggagca tctgcagagt    2160

ggaaagctca atggccagac cacacctatc gatgtctctg cctatcgca aaatgagatt    2220

caaggctttt tgctcggctc acacccctcg tcatcggcga cggtaagcac aaccggcgtt    2280

gtctccacga caacgatctc gcatcaccag caacagcagc agcagcagca acagcaacag    2340

cagcagcagc agcagcaaca ccagcagcag cagcaacatc ccggcgacat tgttagtgcc    2400

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- 48 -

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tttggcttaa gcgttttact tgttgaatat aaagtgtaaa attatttttg aaaaaaaaaa        4740

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<400> 18

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Ser Leu Ser Gly His Ala His Gly His Gly His Ala His Gln Leu His
            20                  25                  30


Gln His Thr His Ser Arg Leu Gly Val Gly Val Gly Val Gly Ile Leu
        35                  40                  45


Ser Asp Ala Ser Leu Ser Pro Ile Gln Gln Gly Ser Gly Gly His Ser
    50                  55                  60


Gly Gly Gly Asn Thr Asn Ser Ser Pro Leu Ala Pro Asn Gly Val Pro
65                  70                  75                  80


Leu Leu Thr Thr Met His Arg Ser Pro Asp Ser Pro Gln Pro Glu Leu
                85                  90                  95


Ala Thr Met Thr Asn Val Asn Val Leu Asp Leu His Thr Asp Asn Ser
                100                 105                 110


Lys Leu Tyr Asp Lys Glu Ala Val Phe Ile Tyr Glu Thr Pro Lys Val
        115                 120                 125


Val Met Pro Ala Asp Gly Gly Gly Asn Asn Ser Asp Glu Gly His
    130                 135                 140


Ala Ile Asp Ala Arg Ile Ala Ala Gln Met Gly Asn Gln Ala Gln Gln
145                 150                 155                 160


Gln Gln Gln Gln Gln Gln Gln Thr Glu His Gln Pro Leu Ala Lys Ile
                165                 170                 175
```

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```
Glu Phe Asp Glu Asn Gln Ile Ile Arg Val Val Gly Pro Asn Gly Glu
        180                 185                 190

Gln Gln Gln Ile Ile Ser Arg Glu Ile Ile Asn Gly Glu His His Ile
        195                 200                 205

Leu Ser Arg Asn Glu Ala Gly Glu His Ile Leu Thr Arg Ile Val Ser
    210                 215                 220

Asp Pro Ser Lys Leu Met Pro Asn Asp Asn Ala Val Ala Thr Ala Met
225                 230                 235                 240

Tyr Asn Gln Ala Gln Lys Met Asn Asn Asp His Gly Gln Ala Val Tyr
                245                 250                 255

Gln Thr Ser Pro Leu Pro Leu Asp Ala Ser Val Leu His Tyr Ser Gly
                260                 265                 270

Gly Asn Asp Ser Asn Val Ile Lys Thr Glu Ala Asp Ile Tyr Glu Asp
        275                 280                 285

His Lys Lys His Ala Ala Ala Ala Ala Ala Ala Gly Gly Gly Ser
        290                 295                 300

Ile Ile Tyr Thr Thr Ser Asp Pro Asn Gly Val Asn Val Lys Gln Leu
305                 310                 315                 320

Pro His Leu Thr Val Pro Gln Lys Leu Asp Pro Asp Leu Tyr Gln Ala
                325                 330                 335

Asp Lys His Ile Asp Leu Ile Tyr Asn Asp Gly Ser Lys Thr Val Ile
                340                 345                 350

Tyr Ser Thr Thr Asp Gln Lys Ser Leu Glu Ile Tyr Ser Gly Gly Asp
        355                 360                 365

Ile Gly Ser Leu Val Ser Asp Gly Gln Val Val Val Gln Ala Gly Leu
        370                 375                 380

Pro Tyr Ala Thr Thr Thr Gly Ala Gly Gly Gln Pro Val Tyr Ile Val
385                 390                 395                 400
```

Ala Asp Gly Ala Leu Pro Ala Gly Val Glu Glu His Leu Gln Ser Gly
            405   410   415

Lys Leu Asn Gly Gln Thr Thr Pro Ile Asp Val Ser Gly Leu Ser Gln
            420   425   430

Asn Glu Ile Gln Gly Phe Leu Leu Gly Ser His Pro Ser Ser Ser Ala
            435   440   445

Thr Val Ser Thr Thr Gly Val Val Ser Thr Thr Thr Ile Ser His His
            450   455   460

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
465   470   475   480

Gln His Gln Gln Gln Gln Gln His Pro Gly Asp Ile Val Ser Ala Ala
            485   490   495

Gly Val Gly Ser Thr Gly Ser Ile Val Ser Ser Ala Ala Gln Gln Gln
            500   505   510

Gln Gln Gln Gln Leu Ile Ser Ile Lys Arg Glu Pro Glu Asp Leu Arg
            515   520   525

Lys Asp Pro Lys Asn Gly Asn Ile Ala Gly Ala Ala Thr Ala Asn Gly
            530   535   540

Pro Gly Ser Val Ile Thr Gln Lys Ser Phe Asp Tyr Thr Glu Leu Cys
545   550   555   560

Gln Pro Gly Thr Leu Ile Asp Ala Asn Gly Ser Ile Pro Val Ser Val
            565   570   575

Asn Ser Ile Gln Gln Arg Thr Ala Val His Gly Ser Gln Asn Ser Pro
            580   585   590

Thr Thr Ser Leu Val Asp Thr Ser Thr Asn Gly Ser Thr Arg Ser Arg
            595   600   605

Pro Trp His Asp Phe Gly Arg Gln Asn Asp Ala Asp Lys Ile Gln Ile
            610   615   620

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Pro Lys Ile Phe Thr Asn Val Gly Phe Arg Tyr His Leu Glu Ser Pro
625   630   635   640

Ile Ser Ser Ser Gln Arg Arg Glu Asp Asp Arg Ile Thr Tyr Ile Asn
                 645   650   655

Lys Gly Gln Phe Tyr Gly Ile Thr Leu Glu Tyr Val His Asp Ala Glu
             660   665   670

Lys Pro Ile Lys Asn Thr Thr Val Lys Ser Val Ile Met Leu Met Phe
         675   680   685

Arg Glu Glu Lys Ser Pro Glu Asp Glu Ile Lys Ala Trp Gln Phe Trp
     690   695   700

His Ser Arg Gln His Ser Val Lys Gln Arg Ile Leu Asp Ala Asp Thr
705   710   715   720

Lys Asn Ser Val Gly Leu Val Gly Cys Ile Glu Glu Val Ser His Asn
             725   730   735

Ala Ile Ala Val Tyr Trp Asn Pro Leu Glu Ser Ser Ala Lys Ile Asn
             740   745   750

Ile Ala Val Gln Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Gly
         755   760   765

Leu Pro Leu His Val Gln Ile Asp Thr Phe Glu Asp Pro Arg Asp Thr
     770   775   780

Ala Val Phe His Arg Gly Tyr Cys Gln Ile Lys Val Phe Cys Asp Lys
785   790   795   800

Gly Ala Glu Arg Lys Thr Arg Asp Glu Glu Arg Arg Ala Ala Lys Arg
                 805   810   815

Lys Met Thr Ala Thr Gly Arg Lys Lys Leu Asp Glu Leu Tyr His Pro
         820   825   830

Val Thr Asp Arg Ser Glu Phe Tyr Gly Met Gln Asp Phe Ala Lys Pro
     835   840   845

Pro Val Leu Phe Ser Pro Ala Glu Asp Met Glu Lys Val Gly Gln Leu

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```
                    850                      855                      860
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Gly Ile Gly Ala Ala Thr Gly Met Thr Phe Asn Pro Leu Ser Asn Gly
865   870   875   880

Asn Ser Asn Ser Asn Ser His Ser Ser Leu Gln Ser Phe Tyr Gly His
                    885   890   895

Glu Thr Asp Ser Pro Asp Leu Lys Gly Ala Ser Pro Phe Leu Leu His
                    900   905   910

Gly Gln Lys Val Ala Thr Pro Thr Leu Lys Phe His Asn His Phe Pro
                    915   920   925

Pro Asp Met Gln Thr Asp Lys Lys Asp His Ile Leu Asp Gln Asn Met
                    930   935   940

Leu Thr Ser Thr Pro Leu Thr Asp Phe Gly Pro Pro Met Lys Arg Gly
945   950   955   960

Arg Met Thr Pro Pro Thr Ser Glu Arg Val Met Leu Tyr Val Arg Gln
                    965   970   975

Glu Asn Glu Glu Val Tyr Thr Pro Leu His Val Val Pro Pro Thr Thr
                    980   985   990

Ile Gly Leu Leu Asn Ala Ile Glu Asn Lys Tyr Lys Ile Ser Thr Thr
                    995   1000   1005

Ser Ile Asn Asn Ile Tyr Arg Thr Asn Lys Lys Gly Ile Thr Ala
        1010   1015   1020

Lys Ile Asp Asp Asp Met Ile Ser Phe Tyr Cys Asn Glu Asp Ile
        1025   1030   1035

Phe Leu Leu Glu Val Gln Gln Ile Glu Asp Asp Leu Tyr Asp Val
        1040   1045   1050

Thr Leu Thr Glu Leu Pro Asn Gln
        1055   1060

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cccatccttc aataacagca acca   84

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<213> Drosophila

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gcagcaacat caaatgttag gccaaaatgc acaaaccgcc agcaacaaag gcagcaccaa   180

gcgaacgaaa caacaacagc tccacatacc acaaagagtg gcacattaga agcggccaaa   240

agcagccagc cgagagcatt gtgtaagcca aaggcccaga gagccaggct aaaagccccc   300

agacgcacaa caacaacaac aacaactaaa acagcacaaa gagtggcgaa aggtgcaccc   360

accagcaaaa cagcaacaac ggagcaacca acaacagcag cagcagcagc agcagccaca   420

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acaacgacta agacgaagat cgaccatcca gaaccggagg gagctaattg cgaacgaaag   720

aaaccacaaa gtgccttcca tcaatccgtt gataagtgat atttattatg tttatacttg   780

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caactaatta gcatcaaacg agagcccgaa gacttgcgca aggatcccaa gaatggcaac    2520

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gggtagcacc cgctaaccgc actcaaaaaa aaaagcaaac aaacacacaa attacggaca    4080

caacaagttg tttcaataag ccattttcca tagagcctaa gtctaaatat cgtagttata    4140

ataatgggat ccgcaacaaa tcgagttgca acgaatgtta agaacgctaa cacaatacgc    4200
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atgtaaaatg atactttaaa attgatttag ttattttagc aacaatgaga ttatctaaaa      4260

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ataagcgtaa tcgtaatcgt aatcgtaccg tgtatttatg ctcatatata aacaactata      4380

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cgaatctatc tattaggtgc atctaacgaa aggaatcatt agctctgcac gaactctagc      4560

cgtagcctat tgtaatccat ttgtatgttt ggcttaagcg ttttacttgt tgaatataaa      4620

gtgtaaaatt atttttgaaa aaaaaaaacc cacacaaaac acaaatcgtt tgttctatat      4680

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<212>   PRT
<213>   Drosophila

<400>   35

Met Ser Thr Ser Thr Ala Thr Thr Ser Val Ile Thr Ser Asn Glu Leu
1               5                   10                  15


Ser Leu Ser Gly His Ala His Gly His Gly His Ala His Gln Leu His
            20                  25                  30


Gln His Thr His Ser Arg Leu Gly Val Gly Val Gly Val Gly Ile Leu
        35                  40                  45


Ser Asp Ala Ser Leu Ser Pro Ile Gln Gln Gly Ser Gly Gly His Ser
    50                  55                  60


Gly Gly Gly Asn Thr Asn Ser Ser Pro Leu Ala Pro Asn Gly Val Pro
65                  70                  75                  80


Leu Leu Thr Thr Met His Arg Ser Pro Asp Ser Pro Gln Pro Glu Leu
                85                  90                  95


Ala Thr Met Thr Asn Val Asn Val Leu Asp Leu His Thr Asp Asn Ser
            100                 105                 110
```

Lys Leu Tyr Asp Lys Glu Ala Val Phe Ile Tyr Glu Thr Pro Lys Val
        115   120   125

Val Met Pro Ala Asp Gly Gly Gly Gly Asn Asn Ser Asp Glu Gly His
    130   135   140

Ala Ile Asp Ala Arg Ile Ala Ala Gln Met Gly Asn Gln Ala Gln Gln
145   150   155   160

Gln Gln Gln Gln Gln Gln Gln Thr Glu His Gln Pro Leu Ala Lys Ile
                165   170   175

Glu Phe Asp Glu Asn Gln Ile Ile Arg Val Val Gly Pro Asn Gly Glu
                180   185   190

Gln Gln Gln Ile Ile Ser Arg Glu Ile Ile Asn Gly Glu His His Ile
        195   200   205

Leu Ser Arg Asn Glu Ala Gly Glu His Ile Leu Thr Arg Ile Val Ser
    210   215   220

Asp Pro Ser Lys Leu Met Pro Asn Asp Asn Ala Val Ala Thr Ala Met
225   230   235   240

Tyr Asn Gln Ala Gln Lys Met Asn Asn Asp His Gly Gln Ala Val Tyr
                245   250   255

Gln Thr Ser Pro Leu Pro Leu Asp Ala Ser Val Leu His Tyr Ser Gly
            260   265   270

Gly Asn Asp Ser Asn Val Ile Lys Thr Glu Ala Asp Ile Tyr Glu Asp
        275   280   285

His Lys Lys His Ala Ala Ala Ala Ala Ala Ala Gly Gly Gly Ser
    290   295   300

Ile Ile Tyr Thr Thr Ser Asp Pro Asn Gly Val Asn Val Lys Gln Leu
305   310   315   320

Pro His Leu Thr Val Pro Gln Lys Leu Asp Pro Asp Leu Tyr Gln Ala
            325   330   335

Asp Lys His Ile Asp Leu Ile Tyr Asn Asp Gly Ser Lys Thr Val Ile

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```
            340                    345                    350

Tyr Ser Thr Thr Asp Gln Lys Ser Leu Glu Ile Tyr Ser Gly Gly Asp
        355                 360                 365

Ile Gly Ser Leu Val Ser Asp Gly Gln Val Val Val Gln Ala Gly Leu
        370                 375                 380

Pro Tyr Ala Thr Thr Thr Gly Ala Gly Gly Gln Pro Val Tyr Ile Val
385                 390                 395                 400

Ala Asp Gly Ala Leu Pro Ala Gly Val Glu Glu His Leu Gln Ser Gly
                405                 410                 415

Lys Leu Asn Gly Gln Thr Thr Pro Ile Asp Val Ser Gly Leu Ser Gln
                420                 425                 430

Asn Glu Ile Gln Gly Phe Leu Leu Gly Ser His Pro Ser Ser Ser Ala
                435                 440                 445

Thr Val Ser Thr Thr Gly Val Val Ser Thr Thr Thr Ile Ser His His
        450                 455                 460

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
465                 470                 475                 480

Gln His Gln Gln Gln Gln Gln His Pro Gly Asp Ile Val Ser Ala Ala
                485                 490                 495

Gly Val Gly Ser Thr Gly Ser Ile Val Ser Ser Ala Ala Gln Gln Gln
                500                 505                 510

Gln Gln Gln Gln Leu Ile Ser Ile Lys Arg Glu Pro Glu Asp Leu Arg
                515                 520                 525

Lys Asp Pro Lys Asn Gly Asn Ile Ala Gly Ala Ala Thr Ala Asn Gly
                530                 535                 540

Pro Gly Ser Val Ile Thr Gln Lys Ser Phe Asp Tyr Thr Glu Leu Cys
545                 550                 555                 560

Gln Pro Gly Thr Leu Ile Asp Ala Asn Gly Ser Ile Pro Val Ser Val
                565                 570                 575
```

```
Asn Ser Ile Gln Gln Arg Thr Ala Val His Gly Ser Gln Asn Ser Pro
            580             585                 590


Thr Thr Ser Leu Val Asp Thr Ser Thr Asn Gly Ser Thr Arg Ser Arg
            595             600                 605


Pro Trp His Asp Phe Gly Arg Gln Asn Asp Ala Asp Lys Ile Gln Ile
    610             615                 620


Pro Lys Ile Phe Thr Asn Val Gly Phe Arg Tyr His Leu Glu Ser Pro
625             630                 635                 640


Ile Ser Ser Ser Gln Arg Arg Glu Asp Asp Arg Ile Thr Tyr Ile Asn
            645             650                 655


Lys Gly Gln Phe Tyr Gly Ile Thr Leu Glu Tyr Val His Asp Ala Glu
            660             665                 670


Lys Pro Ile Lys Asn Thr Thr Val Lys Ser Val Ile Met Leu Met Phe
            675             680                 685


Arg Glu Glu Lys Ser Pro Glu Asp Glu Ile Lys Ala Trp Gln Phe Trp
            690             695                 700


His Ser Arg Gln His Ser Val Lys Gln Arg Ile Leu Asp Ala Asp Thr
705             710                 715                 720


Lys Asn Ser Val Gly Leu Val Gly Cys Ile Glu Glu Val Ser His Asn
                725             730                 735


Ala Ile Ala Val Tyr Trp Asn Pro Leu Glu Ser Ser Ala Lys Ile Asn
                740             745                 750


Ile Ala Val Gln Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Gly
            755             760                 765


Leu Pro Leu His Val Gln Ile Asp Thr Phe Glu Asp Pro Arg Asp Thr
    770             775                 780


Ala Val Phe His Arg Gly Tyr Cys Gln Ile Lys Val Phe Cys Asp Lys
785             790                 795                 800
```

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```
Gly Ala Glu Arg Lys Thr Arg Asp Glu Glu Arg Arg Ala Ala Lys Arg
                805             810             815

Lys Met Thr Ala Thr Gly Arg Lys Lys Leu Asp Glu Leu Tyr His Pro
            820             825             830

Val Thr Asp Arg Ser Glu Phe Tyr Gly Met Gln Asp Phe Ala Lys Pro
            835             840             845

Pro Val Leu Phe Ser Pro Ala Glu Asp Met Glu Lys Ser Phe Tyr Gly
        850             855             860

His Glu Thr Asp Ser Pro Asp Leu Lys Gly Ala Ser Pro Phe Leu Leu
865             870             875             880

His Gly Gln Lys Val Ala Thr Pro Thr Leu Lys Phe His Asn His Phe
            885             890             895

Pro Pro Asp Met Gln Thr Asp Lys Lys Asp His Ile Leu Asp Gln Asn
            900             905             910

Met Leu Thr Ser Thr Pro Leu Thr Asp Phe Gly Pro Pro Met Lys Arg
        915             920             925

Gly Arg Met Thr Pro Pro Thr Ser Glu Arg Val Met Leu Tyr Val Arg
    930             935             940

Gln Glu Asn Glu Glu Val Tyr Thr Pro Leu His Val Val Pro Pro Thr
945             950             955             960

Thr Ile Gly Leu Leu Asn Ala Ile Glu Asn Lys Tyr Lys Ile Ser Thr
            965             970             975

Thr Ser Ile Asn Asn Ile Tyr Arg Thr Asn Lys Lys Gly Ile Thr Ala
            980             985             990

Lys Ile Asp Asp Asp Met Ile Ser Phe Tyr Cys Asn Glu Asp Ile Phe
        995             1000            1005

Leu Leu Glu Val Gln Gln Ile Glu Asp Asp Leu Tyr Asp Val Thr
    1010            1015            1020
```

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```
Leu Thr  Glu Leu Pro Asn Gln
    1025             1030
```

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<212>   DNA
<213>   Drosophila

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cgaaccgacc cgcccctca acttttgcgc cctccagtag caatagcagc aatatgagca      120

gcagcaacat caaatgttag gccaaaatgc acaaaccgcc agcaacaaag gcagcaccaa      180

gcgaacgaaa caacaacagc tccacatacc acaaagagtg gcacattaga agcggccaaa      240

agcagccagc cgagagcatt gtgtaagcca aaggcccaga gagccaggct aaaagccccc      300

agacgcacaa caacaacaac aacaactaaa acagcacaaa gagtggcgaa aggtgcaccc      360

accagcaaaa cagcaacaac ggagcaacca acaacagcag cagcagcagc agcagccaca      420

tttcagttac agctccagac tcccaggttg cagactccca aagcaaacag actccagtcc      480

acgatccagc tccagttcca ccgatccgat ccactgctcc agcgtgctcg agtgccatag      540

atcctcacca agtgccaaaa tccgcatcct gatcccaaga gctcaaggca ccccggccca      600

aaattgagct gagaacgaaa cgaaggaagt tccttagtgc catagaaagc agttaatgaa      660

acaacgacta agacgaagat cgaccatcca gaaccggagg gagctaattg cgaacgaaag      720

aaaccacaaa gtgccttcca tcaatccgtt gataagtgat atttattatg tttatacttg      780

ccagcagccg aggcagcaac agcaatagca acaaccatag gggatcacgg catcgatgat      840

cagtccacga ccaagtccta gtgcaatccg gaatccagtt caaattagtt caataagccg      900

tatctaccac gtataatgtc cacatccacc gccacaacga gcgttatcac gtccaacgag      960

ctctcgctgt ccggccacgc ccacggtcac ggtcacgccc accagttgca ccagcacacc      1020

cacagccgcc taggagttgg cgttggtgtt ggcatcctta gcgacgcatc cctatcgccc      1080

atccaacaag gcagtggcgg ccacagcggc ggaggtaaca caaacagttc accactggcg      1140

cccaacggag tgccacttct cacaacaatg caccgatcac cggactcacc gcagccagaa      1200

ttggccacca tgacgaacgt caacgtgctg gatctgcaca cggataactc caagctgtac      1260

gacaaggagg ctgtatttat atacgaaacg cccaggtgg tgatgccagc ggatggcggg      1320

ggtggcaata attccgatga aggtcatgcc atcgatgcgc ggattgcggc ccaaatgggc      1380

aaccagcccc agcaacagca gcagcagcaa cagcagacgg aacaccagcc gctggccaag      1440
```

- 65 -

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atcgagttcg  atgagaacca  gataatccgg  gtggtgggac  caaatggcga  gcaacagcaa   1500

atcatctcgc  gggagatcat  caatggggag  catcatatcc  tgtcgcgaaa  cgaggctggt   1560

gagcacattc  tcacacggat  cgtcagtgat  ccctccaagt  tgatgcccaa  tgacaatgca   1620

gtggccacgg  ccatgtacaa  ccaggcccaa  aagatgaaca  atgatcacgg  gcaggcggta   1680

tatcagacat  caccattgcc  gctagacgcg  tctgtattgc  attatagtgg  cggcaatgat   1740

tcgaatgtaa  ttaagacgga  ggccgatatc  tacgaggatc  acaagaaaca  tgcggctgca   1800

gcagcagctg  ctgccggcgg  aggatccatc  atatacacca  catccgatcc  gaacggagtg   1860

aatgtgaaac  aactgcccca  tttgacggta  ccccaaaaac  ttgatcccga  cctctatcaa   1920

gccgataagc  atatagattt  gatctacaac  gatggcagca  agacggtgat  ttactccact   1980

acggatcaga  agagtttgga  aatatactcg  ggcggcgaca  tcggcagcct  ggtgtccgac   2040

ggccaagtgg  tggtccaggc  gggactgccg  tatgccacca  ccaccggagc  cggcggccag   2100

cccgtctata  tcgtggccga  cggtgccttg  ccagcgggag  tcgaggagca  tctgcagagt   2160

ggaaagctca  atggccagac  cacacctatc  gatgtctctg  gcctatcgca  aaatgagatt   2220

caaggctttt  tgctcggctc  acacccctcg  tcatcggcga  cggtaagcac  aaccggcgtt   2280

gtctccacga  caacgatctc  gcatcaccag  caacagcagc  agcagcagca  acagcaacag   2340

cagcagcagc  agcagcaaca  ccagcagcag  cagcaacatc  ccggcgacat  tgttagtgcc   2400

gctggcgtgg  ggagcacggg  ctccattgtc  tcctctgcgg  cgcaacagca  gcagcagcag   2460

caactaatta  gcatcaaacg  agagcccgaa  gacttgcgca  aggatcccaa  gaatggcaac   2520

attgccggtg  cagcaacagc  aaatggaccc  ggttcggtca  taacccaaaa  gatcttgcac   2580

gtggatgcac  caacggcaag  tgaagctgat  aggcccagca  cacccagcag  cagcatcaac   2640

agcactgaaa  acactgaatc  ggactcacag  tcagtatcag  gatcagaatc  aggatcgccg   2700

ggagccagga  ccacagccac  actagagatg  tatgcaacca  cgggcggcac  acagatctat   2760

ctacagacct  cacatcccag  cacggcgagc  ggagcgggcg  gcggcgccgg  acccgctgga   2820

gccgccggcg  gcggcggtgt  gtccatgcag  gcgcaaagtc  ccagtccggg  tccctatatc   2880

acggccaatg  actatggcat  gtacacggcc  agtcgcctgc  cacccggtcc  cccgcccacc   2940

agcaccacca  cgtttatagc  ggagccctcc  tactatcggg  aatactttgc  accggatggc   3000

caaggtggct  atgtgccggc  cagcacgagg  tctttgtatg  cgacgtggga  cgtatccgta   3060

tctcagcccg  gcggagtggt  cacctatgag  ggccgctttg  ccggcagcgt  tccccgccc    3120
```

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```
gccaccacca ccgtgctaac cagcgtgcat caccaccagc aacagcagca gcaacaacag   3180

cagcatcaac agcagcagca gcagcaacag caccaccagc agcaacagca ccattcgcag   3240

gatggcaaga gcaatggcgg agcaacgcca ctctatgcca aagccattac ggcggcgggt   3300

ctaacggtgg atttgccaag tccggattcg ggcattggta cggatgccat tacaccgcgg   3360

gatcagacaa atatccaaca gtcctttgat tatacggaat tgtgccagcc gggcacgctg   3420

atcgatgcca atggcagcat acccgtcagc gtgaacagca tccagcagag aacggcggtc   3480

catggcagcc agaacagtcc caccacatcg ctggtggaca ccagcaccaa tggatccacg   3540

cgatcgcggc cctggcacga ctttggacgt cagaatgatg ccgacaaaat acaaatacca   3600

aaaatcttca caaacgtggg cttccgatat cacctggaga gccccatcag ttcatcgcag   3660

aggcgcgagg acgatcgcat cacctacatc aacaagggtc aattctatgg aataacgctg   3720

gagtatgtgc acgatgcgga aaagcccatt aagaacacca ccgtcaagag tgtgatcatg   3780

ctaatgttcc gcgaggagaa gagtcccgag gatgagatca aggcctggca attctggcac   3840

agtcgtcagc attccgtgaa gcagagaatc ttggatgcag atacgaagaa ctcggttggc   3900

ctcgttggct gcatcgagga agtgtcgcac aatgccatcg ccgtctactg gaatccgctg   3960

gagagctccg ccaagatcaa cattgcggtt cagtgcttga gcacggattt cagcagtcaa   4020

aagggaggcc tgccgctgca cgtacaaatc gacacatttg gggaccccag agatacggcg   4080

gtcttccacc gcggctactg tcagataaag gtcttctgcg ataagggcgc cgaacgaaag   4140

acgcgcgatg aagagcggcg ggccgccaaa cgaaagatga cagccacggg cagaaagaag   4200

ctggacgagc tttaccatcc ggtaacggat cggtccgagt tctatggcat gcaggacttc   4260

gccaagccgc cggtgctatt ctcgcccgcc gaggacatgg agaaggtagg tcagctgggc   4320

attggcgctg ccaccggcat gacattcaac cccctgagca acggcaactc caactccaac   4380

tcgcactcgt ccttgcagag cttctacggc catgagactg actcgccgga cctgaagggg   4440

gcctcaccgt tcctgctcca cggccagaag gtggccacgc cgacgctcaa gttccacaac   4500

cattttccgc ccgacatgca gaccgataag aaggatcaca tactggacca gaacatgttg   4560

accagcacac ccctgaccga ctttggtccg ccgatgaagc gcggcaggat gacgccgccg   4620

acctcggaac gcgtgatgct gtacgtgcgg caggagaacg aggaggtgta tacaccgttg   4680

cacgtggtgc cgcccaccac gatcggcctg ctaaatgcga ttgaaaacaa atacaaaatc   4740

tcaacaacga gcataaataa catttatcgc acaaacaaga aggggattac tgcgaaaatt   4800

gacgatgaca tgatatcgtt ctactgcaac gaggacatct ttctgctgga ggtgcaacag   4860
```

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```
atcgaggacg  acctgtacga  tgtgacgctc  acggagctgc  ccaatcagta  gcgctggcag      4920

tacgggtagc  acccgctaac  cgcactcaaa  aaaaaaagca  aacaaacaca  caaattacgg      4980

acacaacaag  ttgtttcaat  aagccatttt  ccatagagcc  taagtctaaa  tatcgtagtt      5040

ataataatgg  gatccgcaac  aaatcgagtt  gcaacgaatg  ttaagaacgc  taacacaata      5100

cgcatgtaaa  atgatacttt  aaaattgatt  tagttatttt  agcaacaatg  agattatcta      5160

aaattgtttg  atcaaatttt  acattctcgc  tatgtctata  gataattcta  agcccgtaag      5220

cccataagcg  taatcgtaat  cgtaatcgta  ccgtgtattt  atgctcatat  ataaacaact      5280

atatatatat  atatatatat  atatatgtgc  ggagtgcaac  agtgtctgtc  cagtaggaga      5340

taagtctcgt  ttccgctccc  ctgcttatgc  tatgacctta  ggtccagggc  aagtatgagt      5400

taccgaatct  atctattagg  tgcatctaac  gaaaggaatc  attagctctg  cacgaactct      5460

agccgtagcc  tattgtaatc  catttgtatg  tttggcttaa  gcgttttact  tgttgaatat      5520

aaagtgtaaa  attatttttg  aaaaaaaaaa  acccacacaa  aacacaaatc  gtttgttcta      5580

tatttctgtt  tcaaaactaa  ctcgttaccc  acaatcccct  ctgttatgta  taattaggat      5640

ctctgtacac                                                                  5650
```

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<211> 1331
<212> PRT
<213> Drosophila

<400> 37

```
Met Ser Thr Ser Thr Ala Thr Thr Ser Val Ile Thr Ser Asn Glu Leu
1               5                   10                  15


Ser Leu Ser Gly His Ala His Gly His Gly His Ala His Gln Leu His
                20                  25                  30


Gln His Thr His Ser Arg Leu Gly Val Gly Val Gly Val Gly Ile Leu
            35                  40                  45


Ser Asp Ala Ser Leu Ser Pro Ile Gln Gln Gly Ser Gly Gly His Ser
        50                  55                  60


Gly Gly Gly Asn Thr Asn Ser Ser Pro Leu Ala Pro Asn Gly Val Pro
65                  70                  75                  80
```

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Leu Leu Thr Thr Met His Arg Ser Pro Asp Ser Pro Gln Pro Glu Leu
            85   90   95

Ala Thr Met Thr Asn Val Asn Val Leu Asp Leu His Thr Asp Asn Ser
            100   105   110

Lys Leu Tyr Asp Lys Glu Ala Val Phe Ile Tyr Glu Thr Pro Lys Val
            115   120   125

Val Met Pro Ala Asp Gly Gly Gly Gly Asn Asn Ser Asp Glu Gly His
        130   135   140

Ala Ile Asp Ala Arg Ile Ala Ala Gln Met Gly Asn Gln Ala Gln Gln
145   150   155   160

Gln Gln Gln Gln Gln Gln Gln Thr Glu His Gln Pro Leu Ala Lys Ile
                165   170   175

Glu Phe Asp Glu Asn Gln Ile Ile Arg Val Val Gly Pro Asn Gly Glu
            180   185   190

Gln Gln Gln Ile Ile Ser Arg Glu Ile Ile Asn Gly Glu His His Ile
        195   200   205

Leu Ser Arg Asn Glu Ala Gly Glu His Ile Leu Thr Arg Ile Val Ser
    210   215   220

Asp Pro Ser Lys Leu Met Pro Asn Asp Asn Ala Val Ala Thr Ala Met
225   230   235   240

Tyr Asn Gln Ala Gln Lys Met Asn Asn Asp His Gly Gln Ala Val Tyr
            245   250   255

Gln Thr Ser Pro Leu Pro Leu Asp Ala Ser Val Leu His Tyr Ser Gly
            260   265   270

Gly Asn Asp Ser Asn Val Ile Lys Thr Glu Ala Asp Ile Tyr Glu Asp
        275   280   285

His Lys Lys His Ala Ala Ala Ala Ala Ala Ala Gly Gly Gly Ser
        290   295   300

Ile Ile Tyr Thr Thr Ser Asp Pro Asn Gly Val Asn Val Lys Gln Leu

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```
305                    310                   315                    320


Pro His Leu Thr Val Pro Gln Lys Leu Asp Pro Asp Leu Tyr Gln Ala
              325             330              335


Asp Lys His Ile Asp Leu Ile Tyr Asn Asp Gly Ser Lys Thr Val Ile
              340             345              350


Tyr Ser Thr Thr Asp Gln Lys Ser Leu Glu Ile Tyr Ser Gly Gly Asp
          355             360              365


Ile Gly Ser Leu Val Ser Asp Gly Gln Val Val Val Gln Ala Gly Leu
      370             375              380


Pro Tyr Ala Thr Thr Thr Gly Ala Gly Gly Gln Pro Val Tyr Ile Val
385             390              395              400


Ala Asp Gly Ala Leu Pro Ala Gly Val Glu Glu His Leu Gln Ser Gly
              405             410              415


Lys Leu Asn Gly Gln Thr Thr Pro Ile Asp Val Ser Gly Leu Ser Gln
              420             425              430


Asn Glu Ile Gln Gly Phe Leu Leu Gly Ser His Pro Ser Ser Ser Ala
          435             440              445


Thr Val Ser Thr Thr Gly Val Val Ser Thr Thr Thr Ile Ser His His
      450             455              460


Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
465             470              475              480


Gln His Gln Gln Gln Gln Gln His Pro Gly Asp Ile Val Ser Ala Ala
              485             490              495


Gly Val Gly Ser Thr Gly Ser Ile Val Ser Ser Ala Ala Gln Gln Gln
          500             505              510


Gln Gln Gln Gln Leu Ile Ser Ile Lys Arg Glu Pro Glu Asp Leu Arg
      515             520              525


Lys Asp Pro Lys Asn Gly Asn Ile Ala Gly Ala Ala Thr Ala Asn Gly
      530             535              540
```

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```
Pro Gly Ser Val Ile Thr Gln Lys Ile Leu His Val Asp Ala Pro Thr
545             550             555             560

Ala Ser Glu Ala Asp Arg Pro Ser Thr Pro Ser Ser Ser Ile Asn Ser
            565             570             575

Thr Glu Asn Thr Glu Ser Asp Ser Gln Ser Val Ser Gly Ser Glu Ser
        580             585             590

Gly Ser Pro Gly Ala Arg Thr Thr Ala Thr Leu Glu Met Tyr Ala Thr
    595             600             605

Thr Gly Gly Thr Gln Ile Tyr Leu Gln Thr Ser His Pro Ser Thr Ala
    610             615             620

Ser Gly Ala Gly Gly Gly Ala Gly Pro Ala Gly Ala Ala Gly Gly Gly
625             630             635             640

Gly Val Ser Met Gln Ala Gln Ser Pro Ser Pro Gly Pro Tyr Ile Thr
            645             650             655

Ala Asn Asp Tyr Gly Met Tyr Thr Ala Ser Arg Leu Pro Pro Gly Pro
            660             665             670

Pro Pro Thr Ser Thr Thr Thr Phe Ile Ala Glu Pro Ser Tyr Tyr Arg
        675             680             685

Glu Tyr Phe Ala Pro Asp Gly Gln Gly Gly Tyr Val Pro Ala Ser Thr
    690             695             700

Arg Ser Leu Tyr Gly Asp Val Asp Val Ser Val Ser Gln Pro Gly Gly
705             710             715             720

Val Val Thr Tyr Glu Gly Arg Phe Ala Gly Ser Val Pro Pro Pro Ala
            725             730             735

Thr Thr Thr Val Leu Thr Ser Val His His Gln Gln Gln Gln Gln
            740             745             750

Gln Gln Gln Gln His Gln Gln Gln Gln Gln Gln Gln His His Gln
    755             760             765
```

Gln Gln Gln His His Ser Gln Asp Gly Lys Ser Asn Gly Gly Ala Thr
    770   775   780

Pro Leu Tyr Ala Lys Ala Ile Thr Ala Ala Gly Leu Thr Val Asp Leu
785   790   795   800

Pro Ser Pro Asp Ser Gly Ile Gly Thr Asp Ala Ile Thr Pro Arg Asp
            805   810   815

Gln Thr Asn Ile Gln Gln Ser Phe Asp Tyr Thr Glu Leu Cys Gln Pro
            820   825   830

Gly Thr Leu Ile Asp Ala Asn Gly Ser Ile Pro Val Ser Val Asn Ser
        835   840   845

Ile Gln Gln Arg Thr Ala Val His Gly Ser Gln Asn Ser Pro Thr Thr
    850   855   860

Ser Leu Val Asp Thr Ser Thr Asn Gly Ser Thr Arg Ser Arg Pro Trp
865   870   875   880

His Asp Phe Gly Arg Gln Asn Asp Ala Asp Lys Ile Gln Ile Pro Lys
            885   890   895

Ile Phe Thr Asn Val Gly Phe Arg Tyr His Leu Glu Ser Pro Ile Ser
            900   905   910

Ser Ser Gln Arg Arg Glu Asp Asp Arg Ile Thr Tyr Ile Asn Lys Gly
        915   920   925

Gln Phe Tyr Gly Ile Thr Leu Glu Tyr Val His Asp Ala Glu Lys Pro
    930   935   940

Ile Lys Asn Thr Thr Val Lys Ser Val Ile Met Leu Met Phe Arg Glu
945   950   955   960

Glu Lys Ser Pro Glu Asp Glu Ile Lys Ala Trp Gln Phe Trp His Ser
            965   970   975

Arg Gln His Ser Val Lys Gln Arg Ile Leu Asp Ala Asp Thr Lys Asn
        980   985   990

- 72 -

Ser Val Gly Leu Val Gly Cys Ile Glu Glu Val Ser His Asn Ala Ile
    995   1000   1005

Ala Val Tyr Trp Asn Pro Leu Glu Ser Ser Ala Lys Ile Asn Ile
    1010   1015   1020

Ala Val Gln Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Gly
    1025   1030   1035

Leu Pro Leu His Val Gln Ile Asp Thr Phe Glu Asp Pro Arg Asp
    1040   1045   1050

Thr Ala Val Phe His Arg Gly Tyr Cys Gln Ile Lys Val Phe Cys
    1055   1060   1065

Asp Lys Gly Ala Glu Arg Lys Thr Arg Asp Glu Glu Arg Arg Ala
    1070   1075   1080

Ala Lys Arg Lys Met Thr Ala Thr Gly Arg Lys Lys Leu Asp Glu
    1085   1090   1095

Leu Tyr His Pro Val Thr Asp Arg Ser Glu Phe Tyr Gly Met Gln
    1100   1105   1110

Asp Phe Ala Lys Pro Pro Val Leu Phe Ser Pro Ala Glu Asp Met
    1115   1120   1125

Glu Lys Val Gly Gln Leu Gly Ile Gly Ala Ala Thr Gly Met Thr
    1130   1135   1140

Phe Asn Pro Leu Ser Asn Gly Asn Ser Asn Ser Asn Ser His Ser
    1145   1150   1155

Ser Leu Gln Ser Phe Tyr Gly His Glu Thr Asp Ser Pro Asp Leu
    1160   1165   1170

Lys Gly Ala Ser Pro Phe Leu Leu His Gly Gln Lys Val Ala Thr
    1175   1180   1185

Pro Thr Leu Lys Phe His Asn His Phe Pro Pro Asp Met Gln Thr
    1190   1195   1200

Asp Lys Lys Asp His Ile Leu Asp Gln Asn Met Leu Thr Ser Thr

```
         1205                  1210                  1215


Pro Leu  Thr Asp Phe Gly Pro  Pro Met Lys Arg Gly  Arg Met Thr
         1220                  1225                  1230


Pro Pro  Thr Ser Glu Arg Val  Met Leu Tyr Val Arg  Gln Glu Asn
         1235                  1240                  1245


Glu Glu  Val Tyr Thr Pro Leu  His Val Val Pro Pro  Thr Thr Ile
         1250                  1255                  1260


Gly Leu  Leu Asn Ala Ile Glu  Asn Lys Tyr Lys Ile  Ser Thr Thr
         1265                  1270                  1275


Ser Ile  Asn Asn Ile Tyr Arg  Thr Asn Lys Lys Gly  Ile Thr Ala
         1280                  1285                  1290


Lys Ile  Asp Asp Asp Met Ile  Ser Phe Tyr Cys Asn  Glu Asp Ile
         1295                  1300                  1305


Phe Leu  Leu Glu Val Gln Gln  Ile Glu Asp Asp Leu  Tyr Asp Val
         1310                  1315                  1320


Thr Leu  Thr Glu Leu Pro Asn  Gln
         1325                  1330
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<211> 5557
<212> DNA
<213> Drosophila

<400> 38
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gcagcaacat caaatgttag gccaaaatgc acaaaccgcc agcaacaaag gcagcaccaa     180

gcgaacgaaa caacaacagc tccacatacc acaaagagtg gcacattaga agcggccaaa     240

agcagccagc cgagagcatt gtgtaagcca aaggcccaga gagccaggct aaaagccccc     300

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ccagcagccg aggcagcaac agcaatagca acaaccatag gggatcacgg catcgatgat     840

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cccgtctata tcgtggccga cggtgccttg ccagcgggag tcgaggagca tctgcagagt    2160

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            20                  25                  30


Gln His Thr His Ser Arg Leu Gly Val Gly Val Gly Val Gly Ile Leu
            35                  40                  45


Ser Asp Ala Ser Leu Ser Pro Ile Gln Gln Gly Ser Gly Gly His Ser
    50                  55                  60


Gly Gly Gly Asn Thr Asn Ser Ser Pro Leu Ala Pro Asn Gly Val Pro
65                  70                  75                  80


Leu Leu Thr Thr Met His Arg Ser Pro Asp Ser Pro Gln Pro Glu Leu
                85                  90                  95


Ala Thr Met Thr Asn Val Asn Val Leu Asp Leu His Thr Asp Asn Ser
            100                 105                 110


Lys Leu Tyr Asp Lys Glu Ala Val Phe Ile Tyr Glu Thr Pro Lys Val
        115                 120                 125


Val Met Pro Ala Asp Gly Gly Gly Gly Asn Asn Ser Asp Glu Gly His
    130                 135                 140


Ala Ile Asp Ala Arg Ile Ala Ala Gln Met Gly Asn Gln Ala Gln Gln
145                 150                 155                 160


Gln Gln Gln Gln Gln Gln Gln Thr Glu His Gln Pro Leu Ala Lys Ile
                165                 170                 175


Glu Phe Asp Glu Asn Gln Ile Ile Arg Val Val Gly Pro Asn Gly Glu
            180                 185                 190


Gln Gln Gln Ile Ile Ser Arg Glu Ile Ile Asn Gly Glu His His Ile
        195                 200                 205
```

```
Leu Ser Arg Asn Glu Ala Gly Glu His Ile Leu Thr Arg Ile Val Ser
    210             215             220
```

```
Asp Pro Ser Lys Leu Met Pro Asn Asp Asn Ala Val Ala Thr Ala Met
225             230             235             240
```

```
Tyr Asn Gln Ala Gln Lys Met Asn Asn Asp His Gly Gln Ala Val Tyr
            245             250             255
```

```
Gln Thr Ser Pro Leu Pro Leu Asp Ala Ser Val Leu His Tyr Ser Gly
            260             265             270
```

```
Gly Asn Asp Ser Asn Val Ile Lys Thr Glu Ala Asp Ile Tyr Glu Asp
        275             280             285
```

```
His Lys Lys His Ala Ala Ala Ala Ala Ala Ala Gly Gly Gly Ser
    290             295             300
```

```
Ile Ile Tyr Thr Thr Ser Asp Pro Asn Gly Val Asn Val Lys Gln Leu
305             310             315             320
```

```
Pro His Leu Thr Val Pro Gln Lys Leu Asp Pro Asp Leu Tyr Gln Ala
            325             330             335
```

```
Asp Lys His Ile Asp Leu Ile Tyr Asn Asp Gly Ser Lys Thr Val Ile
            340             345             350
```

```
Tyr Ser Thr Thr Asp Gln Lys Ser Leu Glu Ile Tyr Ser Gly Gly Asp
    355             360             365
```

```
Ile Gly Ser Leu Val Ser Asp Gly Gln Val Val Val Gln Ala Gly Leu
    370             375             380
```

```
Pro Tyr Ala Thr Thr Thr Gly Ala Gly Gly Gln Pro Val Tyr Ile Val
385             390             395             400
```

```
Ala Asp Gly Ala Leu Pro Ala Gly Val Glu Glu His Leu Gln Ser Gly
            405             410             415
```

```
Lys Leu Asn Gly Gln Thr Thr Pro Ile Asp Val Ser Gly Leu Ser Gln
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```

Asn Glu Ile Gln Gly Phe Leu Leu Gly Ser His Pro Ser Ser Ser Ala
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Thr Val Ser Thr Thr Gly Val Val Ser Thr Thr Thr Ile Ser His His
      450   455   460

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
465   470   475   480

Gln His Gln Gln Gln Gln Gln His Pro Gly Asp Ile Val Ser Ala Ala
            485   490   495

Gly Val Gly Ser Thr Gly Ser Ile Val Ser Ser Ala Ala Gln Gln Gln
          500   505   510

Gln Gln Gln Gln Leu Ile Ser Ile Lys Arg Glu Pro Glu Asp Leu Arg
          515   520   525

Lys Asp Pro Lys Asn Gly Asn Ile Ala Gly Ala Ala Thr Ala Asn Gly
      530   535   540

Pro Gly Ser Val Ile Thr Gln Lys Ile Leu His Val Asp Ala Pro Thr
545   550   555   560

Ala Ser Glu Ala Asp Arg Pro Ser Thr Pro Ser Ser Ser Ile Asn Ser
            565   570   575

Thr Glu Asn Thr Glu Ser Asp Ser Gln Ser Val Ser Gly Ser Glu Ser
          580   585   590

Gly Ser Pro Gly Ala Arg Thr Thr Ala Thr Leu Glu Met Tyr Ala Thr
          595   600   605

Thr Gly Gly Thr Gln Ile Tyr Leu Gln Thr Ser His Pro Ser Thr Ala
      610   615   620

Ser Gly Ala Gly Gly Gly Ala Gly Pro Ala Gly Ala Ala Gly Gly Gly
625   630   635   640

Gly Val Ser Met Gln Ala Gln Ser Pro Ser Pro Gly Pro Tyr Ile Thr
          645   650   655

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```
Ala Asn Asp Tyr Gly Met Tyr Thr Ala Ser Arg Leu Pro Pro Gly Pro
        660             665             670


Pro Pro Thr Ser Thr Thr Thr Phe Ile Ala Glu Pro Ser Tyr Tyr Arg
        675             680             685


Glu Tyr Phe Ala Pro Asp Gly Gln Gly Gly Tyr Val Pro Ala Ser Thr
    690             695             700


Arg Ser Leu Tyr Gly Asp Val Asp Val Ser Val Ser Gln Pro Gly Gly
705             710             715             720


Val Val Thr Tyr Glu Gly Arg Phe Ala Gly Ser Val Pro Pro Pro Ala
            725             730             735


Thr Thr Thr Val Leu Thr Ser Val His His Gln Gln Gln Gln Gln Gln
            740             745             750


Gln Gln Gln Gln His Gln Gln Gln Gln Gln Gln Gln Gln His His Gln
        755             760             765


Gln Gln Gln His His Ser Gln Asp Gly Lys Ser Asn Gly Gly Ala Thr
        770             775             780


Pro Leu Tyr Ala Lys Ala Ile Thr Ala Ala Gly Leu Thr Val Asp Leu
785             790             795             800


Pro Ser Pro Asp Ser Gly Ile Gly Thr Asp Ala Ile Thr Pro Arg Asp
                805             810             815


Gln Thr Asn Ile Gln Gln Ser Phe Asp Tyr Thr Glu Leu Cys Gln Pro
            820             825             830


Gly Thr Leu Ile Asp Ala Asn Gly Ser Ile Pro Val Ser Val Asn Ser
        835             840             845


Ile Gln Gln Arg Thr Ala Val His Gly Ser Gln Asn Ser Pro Thr Thr
    850             855             860


Ser Leu Val Asp Thr Ser Thr Asn Gly Ser Thr Arg Ser Arg Pro Trp
865             870             875             880


His Asp Phe Gly Arg Gln Asn Asp Ala Asp Lys Ile Gln Ile Pro Lys
```

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```
                    885                   890                    895

    Ile Phe Thr Asn Val Gly Phe Arg Tyr His Leu Glu Ser Pro Ile Ser
                    900                   905               910

    Ser Ser Gln Arg Arg Glu Asp Asp Arg Ile Thr Tyr Ile Asn Lys Gly
                    915                   920               925

    Gln Phe Tyr Gly Ile Thr Leu Glu Tyr Val His Asp Ala Glu Lys Pro
            930                   935               940

    Ile Lys Asn Thr Thr Val Lys Ser Val Ile Met Leu Met Phe Arg Glu
    945                   950                   955               960

    Glu Lys Ser Pro Glu Asp Glu Ile Lys Ala Trp Gln Phe Trp His Ser
                    965                   970               975

    Arg Gln His Ser Val Lys Gln Arg Ile Leu Asp Ala Asp Thr Lys Asn
                980                   985               990

    Ser Val Gly Leu Val Gly Cys Ile Glu Glu Val Ser His Asn Ala Ile
                995                   1000                   1005

    Ala Val Tyr Trp Asn Pro Leu Glu Ser Ser Ala Lys Ile Asn Ile
        1010            1015                   1020

    Ala Val Gln Cys Leu Ser Thr Asp Phe Ser Ser Gln Lys Gly Gly
        1025                   1030                   1035

    Leu Pro Leu His Val Gln Ile Asp Thr Phe Glu Asp Pro Arg Asp
        1040                   1045                   1050

    Thr Ala Val Phe His Arg Gly Tyr Cys Gln Ile Lys Val Phe Cys
        1055                   1060                   1065

    Asp Lys Gly Ala Glu Arg Lys Thr Arg Asp Glu Glu Arg Arg Ala
        1070                   1075                   1080

    Ala Lys Arg Lys Met Thr Ala Thr Gly Arg Lys Lys Leu Asp Glu
        1085                   1090                   1095

    Leu Tyr His Pro Val Thr Asp Arg Ser Glu Phe Tyr Gly Met Gln
        1100                   1105                   1110
```

```
Asp Phe  Ala Lys Pro Pro Val  Leu Phe Ser Pro Ala  Glu Asp Met
    1115                  1120              1125

Glu Lys  Val Gly Gln Leu Gly  Ile Gly Ala Ala Thr  Gly Met Thr
    1130                  1135              1140

Phe Asn  Pro Leu Ser Asn Gly  Asn Ser Asn Ser Asn  Ser His Ser
    1145                  1150              1155

Ser Leu  Gln Ser Phe Tyr Gly  His Glu Thr Asp Ser  Pro Asp Leu
    1160                  1165              1170

Lys Gly  Ala Ser Pro Phe Leu  Leu His Gly Gln Lys  Val Ala Thr
    1175                  1180              1185

Pro Thr  Leu Lys Phe His Asn  His Phe Pro Pro Asp  Met Gln Thr
    1190                  1195              1200

Asp Lys  Lys Asp His Ile Leu  Asp Gln Asn Met Leu  Thr Ser Thr
    1205                  1210              1215

Pro Leu  Thr Asp Phe Gly Pro  Pro Met Lys Arg Gly  Arg Met Thr
    1220                  1225              1230

Pro Pro  Thr Ser Glu Arg Val  Met Leu Tyr Val Arg  Gln Glu Asn
    1235                  1240              1245

Glu Glu  Val Tyr Thr Pro Leu  His Val Val Pro Pro  Thr Thr Ile
    1250                  1255              1260

Gly Leu  Leu Asn Ala Ile Glu  Asn Lys Tyr Lys Ile  Ser Thr Thr
    1265                  1270              1275

Ser Ile  Asn Asn Ile Tyr Arg  Thr Asn Lys Lys Gly  Ile Thr Ala
    1280                  1285              1290

Lys Ile  Asp Asp Asp Met Ile  Ser Phe Tyr Cys Asn  Glu Asp Ile
    1295                  1300              1305

Phe Leu  Leu Glu Val Gln Gln  Ile Glu Asp Asp Leu  Tyr Asp Val
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